

THE IRON AGE

A Review of the Hardware, Iron, Machinery and Mill Trades.

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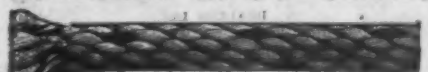
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THE IRON AGE

THURSDAY, AUGUST 11, 1904.

The Murray Rolling Mill Engine.

An Exhibit at the St. Louis World's Fair.

In the Intramural Railway Power Plant, Block 42, Machinery Hall, Louisiana Purchase Exposition, St.

Louis, the first engine to be put into operation was a 26 x 48 inch rolling mill type of engine furnished by the Murray Iron Works, Burlington, Iowa. Two views of this engine are shown in the accompanying half-tones, Figs. 1 and 2, and details of the construction in the line cylinder. It is direct connected to a Crocker-Wheeler 500-kw. 550-volt direct current generator. Separate eccentrics operate the steam and exhaust valves, which are double ported. Speed control is afforded by a governor of high speed type driven by chain instead of the more

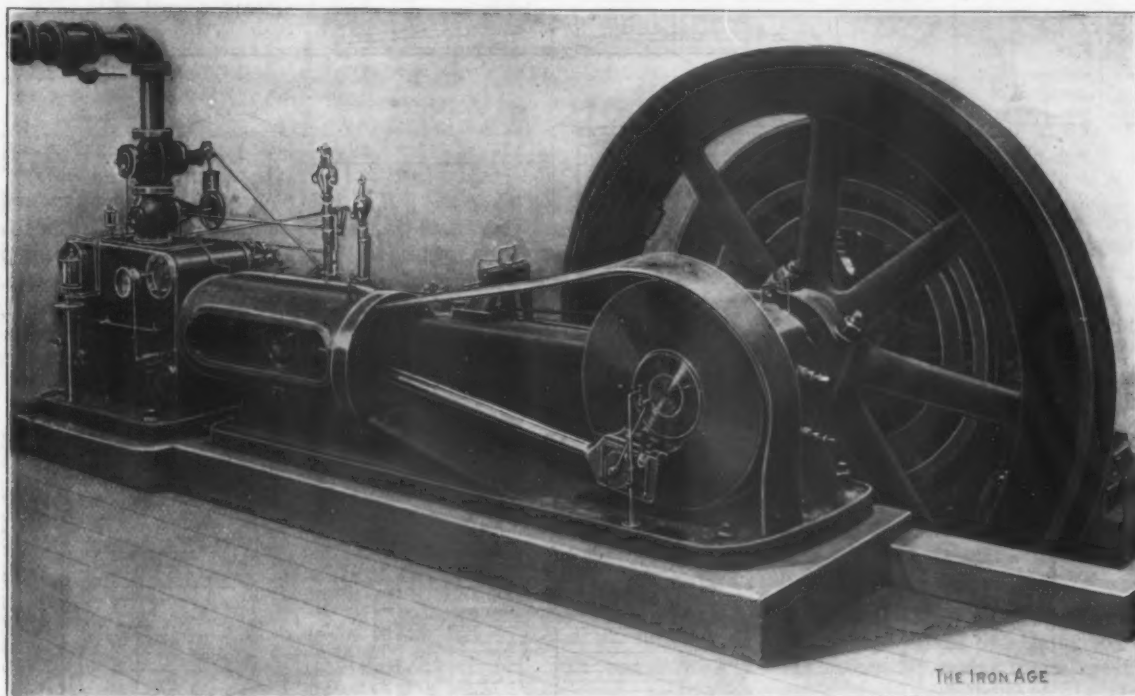


Fig. 1.—The Murray 26 x 48 Inch Rolling Mill Engine, from the Crank Side.

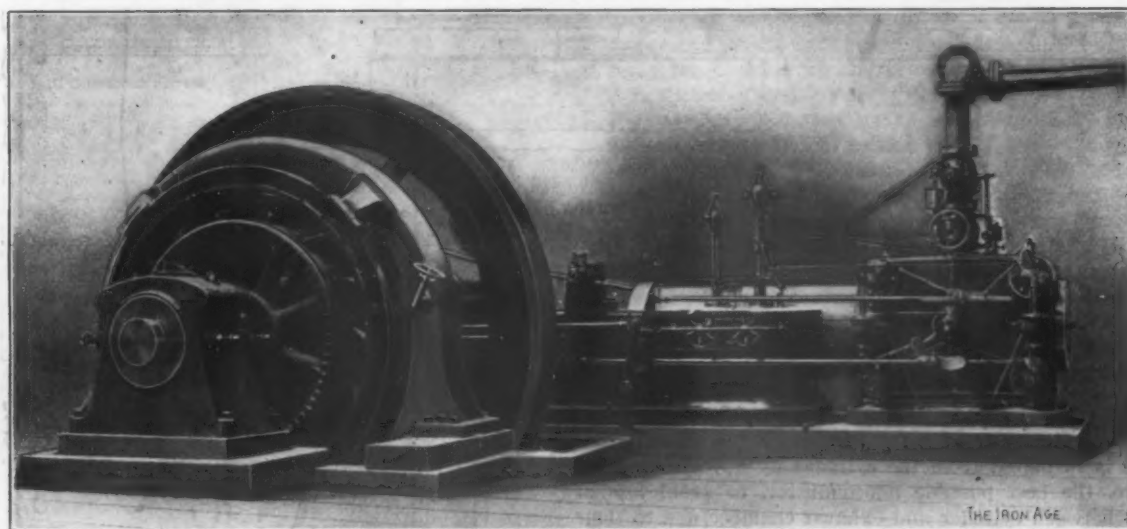


Fig. 2.—View of Opposite Side, Showing Valve Mechanism.

drawings, Figs. 3 to 7. This engine runs at a speed of 100 revolutions per minute, and is designed for a steam pres-

sure of 150 pounds, allowing for two reborings of the common belt. There is also an auxiliary governor connected with an automatic safety stop. Oil for lubricating is kept in circulation whenever the engine is in operation by a small plunger pump, which may be seen indistinctly near the center of Fig. 2. It is fixed on the out-

The Rolling Mill Type Frame.

The bed frame is of a graceful pattern, very strong and rigid, being designed to withstand high pressures and high speeds such as might prove too great for a girder or Tangye type of frame. It is one massive casting, which is in contact with the foundation its full length, and has heavy transverse ribs at all points of maximum strain, as indicated in Fig. 3. The outboard bearing is of the pedestal type and of a design which is in keeping with the main frame. The boxes in the outboard and main bear-

ings are aligned horizontally by large set screws, and vertically by wedges bearing on inclined faces on the castings and adjustable by bolts extending through the sides of the castings. This arrangement as provided in the main bearing may be seen in Fig. 3. The outboard bear-

the cylinder, being double ported, and when closed is seated directly below its center, so that its weight tends to keep it tight. The shortness of the passages between the valve ports and the cylinder is indicative of the small amount of clearance volume. Fig. 4 shows the form of

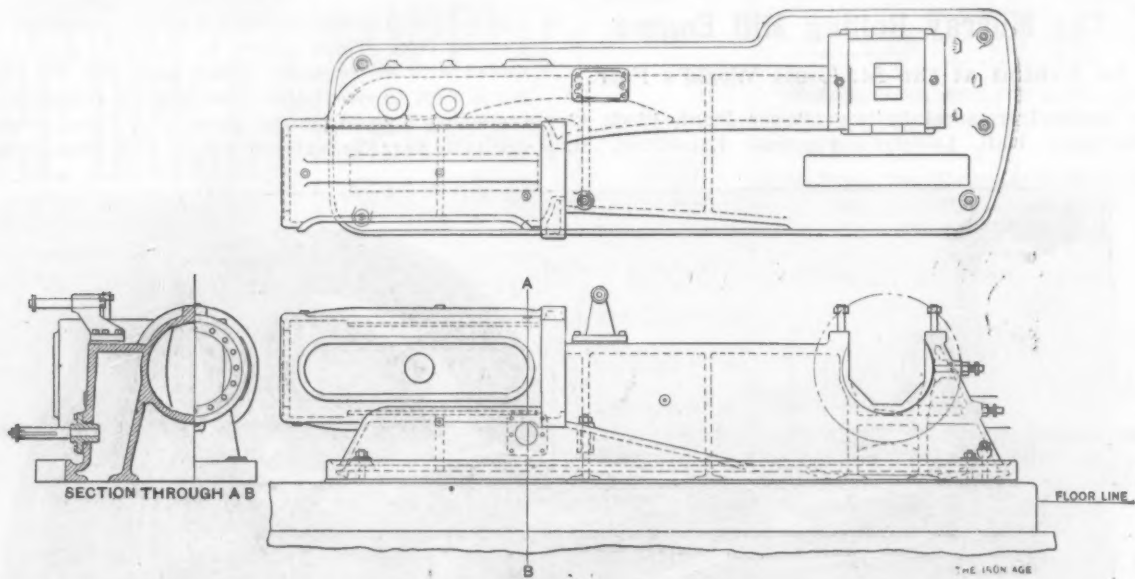


Fig. 3.—Plan, Elevation and Cross Section of the Bed Plate.

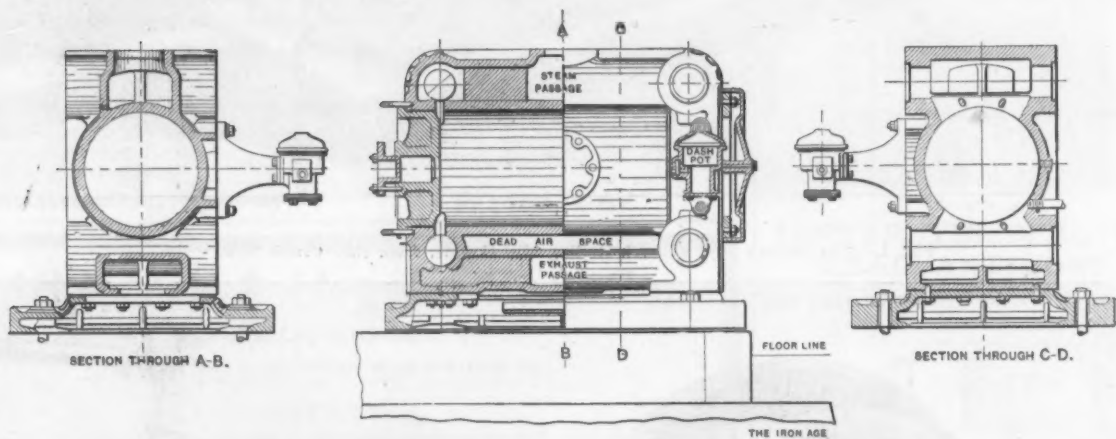


Fig. 4.—Details of the Cylinder.

ing, bed frame and cylinder bed plate are all provided with oil retaining flanges, a feature of more importance than is generally recognized, for there is nothing more harmful to a cement foundation than the disintegration resulting from its becoming permeated with oil.

The Cylinder and Valves.

The cylinder is of a form in which the exhaust passage is insulated from the cylinder by a wide dead air space, the best possible nonconductor, to avoid loss of heat between cylinder and exhaust chamber due to their different temperatures. The casting is supported on an independent bed plate having an oil retaining flange, as before stated. Connections are provided for an 8-inch steam supply on the top of the cylinder casting and a 10-inch exhaust on the under side. The exhaust pipe is led under the floor through the bed plate.

The double ported steam valve is perfectly free to find its own seat and adjustment and opens quickly, allowing steam to enter in two ways, almost totally avoiding wire drawing. The space which is to be noticed above and around the valve is another advantage, for in the event of an accumulation of entrained water in the cylinder the valve will lift and permit it to escape as soon as the pressure exceeds the steam pressure. The form of the exhaust valve is peculiarly desirable, as it affords a large and quickly opened passage for the escape of the steam from

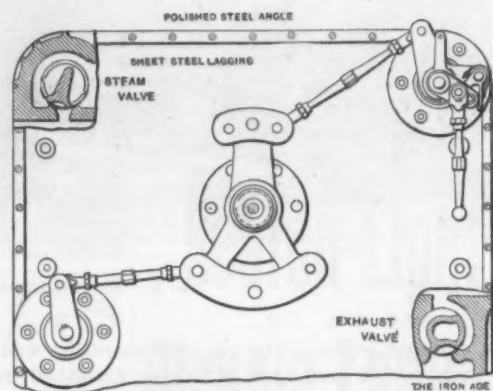


Fig. 5.—Valve Mechanism and Form of the Valves.

the cylinder casting, and Fig. 5 the form and action of the valves illustrating the points above referred to. The dash pots are secured to the sides of the cylinder by brackets, a location which is the least obtrusive and shortens the length of the dash pot rods. The cylinder is jacketed with a thick layer of magnesia, and is lagged with steel plate retained by polished angle irons.

The Piston, Rod and Cross Head.

A detail of the piston, piston rod and cross head is shown in Fig. 6. Special consideration was given to the design of the piston to make it as strong, light and easy running as possible. There are no parts that can become

with a fine hack saw, the cuts being made at an angle of 45 degrees. Recessed coiled springs bearing on plates under each joint expand the ring against the cylinder wall.

The cross head is extra heavy, and has shoes turned

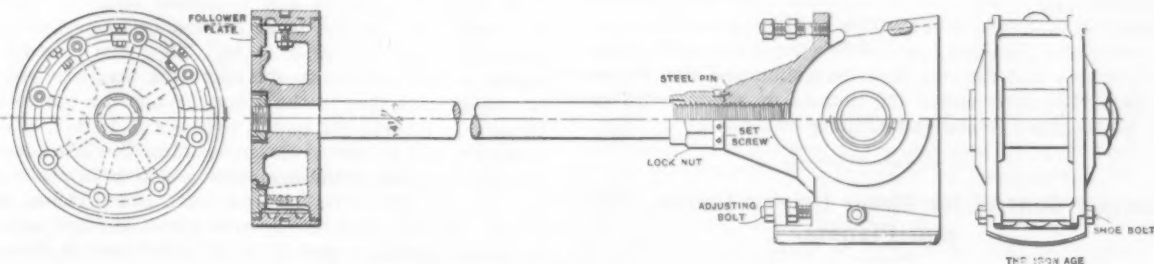


Fig. 6.—Details of the Piston and Cross Head.

loosened or shake around, and provision is made for keeping the rod in line, and therefore in the best condition. The piston is pressed on the rod by hydraulic pressure, and there secured by a countersunk forged steel nut, milled as indicated. They are then turned and finished together, making them perfectly concentric. The bolts

to fit the bored guides. As will be seen, these shoes have a bearing the entire length of the cross head. The shoes are capable of easy adjustment by means of the bolts shown. After being adjusted, the shoes are clamped to the cross head by two other bolts, which prevent them from becoming loose. These allow the removing of the shoes for examination, scraping or rebabbiting without removing the cross head from the guides. Features of note are the extra heavy neck of the cross head, and the method of connecting the rod by screwing it into the cross head instead of keying. The provision for preventing the lock nut from loosening, as clearly shown in Fig. 6, is also interesting. The cross head pin is 7 inches in diameter by 8 inches long, and the piston rod is $4\frac{1}{2}$ inches in diameter.

The Connecting Rod, Shaft and Fly Wheel.

The most notable feature of the connecting rod is that one of the adjusting wedges for taking up the wear of the blocks is placed inside and one outside of the pins, the purpose being to equalize the wear and prevent the lengthening of the connecting rod, as would be the case if both wedges were placed inside of the pins. Such a lengthening would result in throwing all of the clearance to one end of the cylinder. The wedge blocks have wide faces for backing up the brasses, which are far better than narrow faced keys.

The shaft is a very heavy steel forging, 20 inches in diameter at its largest section and 15 inches in diameter in the bearings. The journal on the crank side is 34 inches long, and the outboard journal 30 inches. The crank pin is 8 inches in diameter by 8 inches long.

The fly wheel is 16 feet in diameter, and weighs 62,000 pounds. It was cast in halves in the usual way to avoid initial strains due to shrinking, and the two halves are secured together by shrink bolts in the sides of the rim and also by bolts in the flanges on the inside of the rim. The hub is keyed on the shaft, and also clamped by four stud bolts 3 feet 9 inches long and 4 inches in diameter.

The Governors.

Close regulation, so necessary where an engine is used for the direct driving of an electric generator, is obtained by an improved high speed governor, making from two to three revolutions to one of the engine. This increases its sensitiveness and power with proportionately less frictional resistance to overcome. The construction of this part in detail is shown in Fig. 7, from which it will be seen that the center weight has a cavity at the top to receive shot or a spring for adjusting the speed even to a fraction of a revolution. It will also be noticed that all of the vertical thrust bearings are fitted with hardened steel balls to make it as light running and sensitive as possible. The automatic safety stop valve is operated by a governor of similar form also provided with ball bearings. This governor, the small one at the left in Fig. 2, is connected by a series of links with an 8-inch valve similar in form to a cut off valve, and located on the steam supply just above the throttle valve. When the engine exceeds the speed for which this stop is set a trip is released on the valve, allowing it to be closed by a

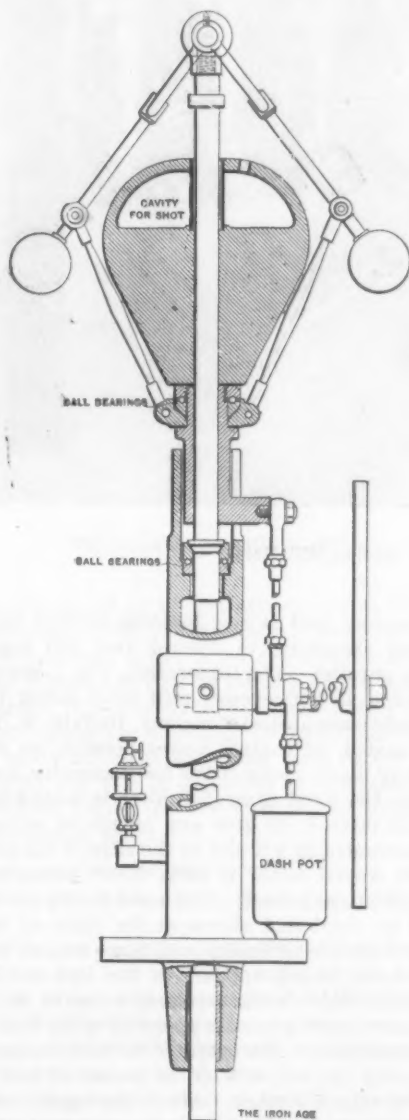


Fig. 7.—The Governor in Detail.

holding the follower plate have extra long threads, and have their heads recessed into the plate, reducing the necessary clearance volume for the desired striking clearance. The piston is provided with a single packing ring carefully fitted by hand. The ring is turned in one piece 26 inches in diameter and then cut into eight equal parts

suspended weight. Both governors are driven through bevel gears by sprockets connected by chains with sprockets on the main shaft.

Standard Sizes of the Engine.

The engine is made in either right hand or left hand patterns, the latter form being the one shown in the illustrations, and is made in 22 standard sizes, from 11 x 24 inches to 30 x 48 inches. The smallest gives 80 horsepower under 120 pounds pressure when cutting off at one-fifth stroke and running noncondensing, and the largest, 1640 horse-power under 150 pounds of steam, with cut off at one-third stroke and running condensing.

Electric Control for Motor Driven Rolling Mills and Planers.

During recent years there have been many attempts to use electric motors for driving rolling mill tables. Nearly all have been successful, and although the repair bill has always been heavier than where engines were used, the advantages have, in general, been considered to

resistances and the armature brought to rest by temporarily converting the motor to a generator, before current can be applied for accelerating in reverse direction. When the motor is running at full speed in either direction the switches R 1, R 2, R 3 and R 4 in Fig. 1 are closed, cutting out the corresponding four banks of resistance, and switches U are also closed. It will be noticed that switches D and U cannot both be closed at the same time, as the lever pivoted between them holds one out while the other is in. They are closed alternately as the current in the operating magnetic solenoid of one exceeds that in the other. When the controller is thrown to reverse the motor switches R 1, R 2, R 3 and R 4 open and switch D closes, opening U. The cessation of current through the armature which is in series with the coil of D allows the latter to open and U closes, which starts the motor in the reverse direction, and as it accelerates the resistances R 1, R 2, R 3 and R 4 are cut out successively by the automatic closing of these switches. The system is simple and the connections easy to trace.

The company has recently built controllers of this class for the Illinois Steel Company and the Lackawanna

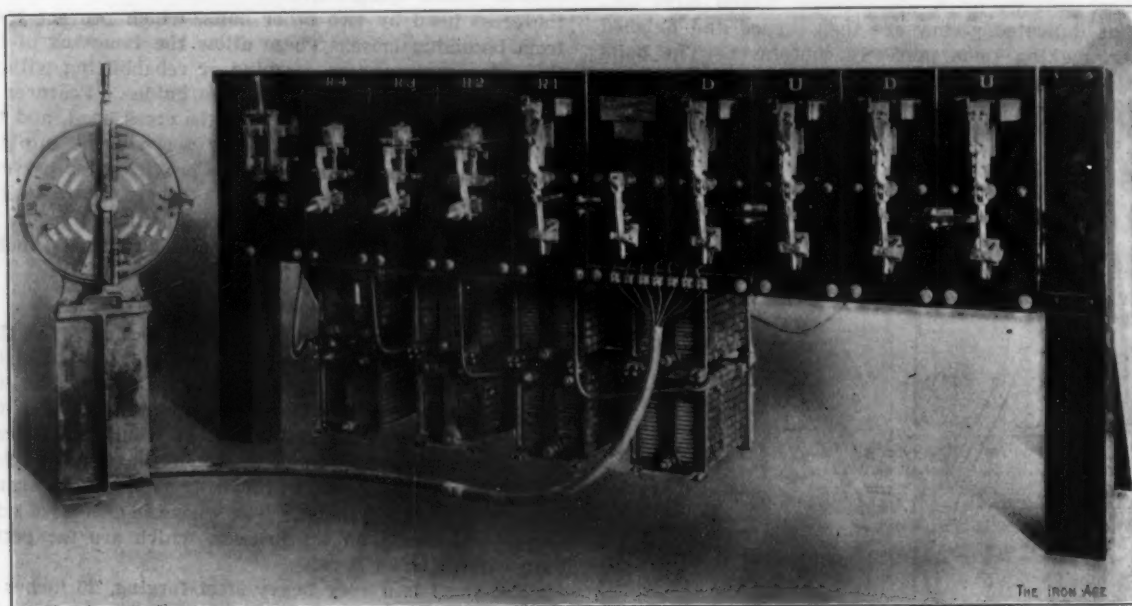


Fig. 1.—A Controller for a 75 Horse-Power Rolling Mill Motor.

overbalance this item. In most cases some sort of manually operated controller has been used and therein lies the danger, for either the operator is ambitious for records and forces the motor to accelerate or reverse faster than it is capable of doing and so burns it out, or he is careless and "plugs," with the same result. The Electric Controller & Supply Company, Cleveland, Ohio, has developed a controller to overcome these difficulties and make it possible to use motors to drive the heaviest kind of machinery, no matter how frequently it must be started and reversed. The operator has a small, easily operated hand switch, by which he starts, stops or reverses the motor; but the controller proper is automatic in action, and no matter how viciously the operator reverses or "plugs" his hand switch the motor is never subjected to more than a predetermined overload, say 50 or 100 per cent., for which the controller is set.

The controller consists of a set of magnetic clapper switches having blowouts which prevent burned contacts, so frequently the cause of trouble with hand operated controllers. The hand switch carries currents of only an ampere or two, so that it never causes trouble. In reversing a motor operating at full speed under load it is necessary, first, to absorb and dissipate the energy in the rotating parts due to their forward motion and, second, to accelerate them in reverse direction. This controller is constructed to perform these two operations separately, the energy of forward motion being absorbed by cast iron

Steel Company, and is now building several for the Lorain Steel Company, to control two 100 horse-power motors in parallel. The illustration, Fig. 1, shows a controller for a 75 horse-power mill table motor furnished to the Lackawanna Steel Company, Buffalo, N. Y.

This system of control makes possible an especially satisfactory direct motor drive for planers or large shapers. Here the hand controller lever is moved by a pair of dogs adjustable to give any length of stroke, being slidably mounted in a T-slot in the edge of the platen. A compound wound motor is used, direct connected to the cross shaft of the planer. The accelerating switches are mounted on the board shown at the right of the motor in Fig. 2, with the necessary resistance behind the board. The reversing switch appears at the left of the motor. This switch, while being regularly actuated by the dogs on the platen, has a handle operated from both sides of the planer to assist the operator in positioning the dogs when setting up, and to stop the planer at any point on the cut or return strokes. Above the motor are located the speed controllers, by which the operator adjusts the speed of cut and return stroke at will, and without stopping the planer. This handy control of speed to suit various classes of work is extremely economical and puts the productive capacity of planers in the same class as motor driven lathes with variable speed control.

Below are given speeds and cuts obtained on the 36 x 36 inch x 12 foot Pond planer shown in the engraving.

A two-voltage system with 110 and 220 volts is used in this case, and a 12 horse-power Westinghouse motor:

Cutting speeds in feet per minute.		Return speeds in feet per minute.
110 volts.	220 volts.	220 volts.
15	35	32
20	38	38
22½	43	43
25	48	47
28	52	52
31	58	58
33	63	63
36	69	69
39	73	73
41	78	78
45	82	82

The above speeds were measured with a cut meter made by the Warner Instrument Company. Some representative cuts taken are as follows: In medium cast iron, 1½ inch deep by 3-32 inch feed, at 50 feet per minute. In a 20 per cent. carbon Bessemer steel ingot, ½ inch deep by 3-32 inch feed, at 47 feet per minute. These and heavier cuts at higher speed, which the tool steel would not stand, were taken without sparking at the commutator. Strokes of 6 inches total length are easily obtained on this planer,

The tonnages are always about a month in arrears, and the reports for the month ending June 30 and the year to that date will show some falling off, but we shall be surprised if the total for the year 1904 shows less than 270,000,000 tons of soft coal produced. That is a reduction of 5 per cent. from last year's figures. How many large lines of business can go through such a period of depression with such a showing as that? The fact is that the per capita consumption of coal shows an increase as steady as the growth of civilization, and will not cease until inventors cease from their labors and machines are discarded in favor of a return to hand work. Even in coal mining itself there is a marked increase in the use of machinery in and about the mines, and the coal used for colliery consumption is larger every year, though the result of this innovation is a reduced cost of operation, and in some cases better prepared coal.

In 1880 the production of bituminous coal per capita was about ¾ ton, while in 1903 it was about 3½ tons per capita, and even should there be no greater increase in per capita consumption during the next ten years, the production by 1914 will be not less than 350,000,000 tons,

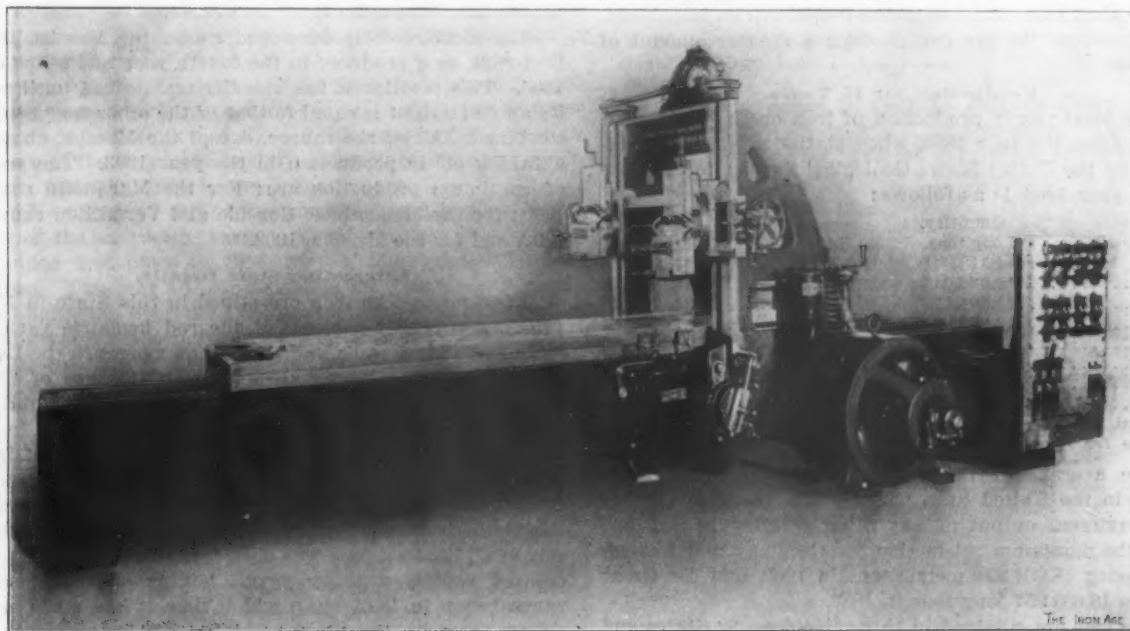


Fig. 2.—A 36-Inch Planer with Direct Motor Drive and the New System of Control.

and with cutting speed at 40 feet and return at 80 feet, the platen reverses within 1-16 inch of a line on the cut.

The above described motor drive can be built for any direct current voltage, as well as for any of the multiple voltage systems. It is manufactured under patent rights by the Electric Controller & Supply Company, Cleveland, Ohio, which issues bulletins describing these drives. The planer shown in Fig. 2 is in operation in this company's exhibit at the St. Louis World's Fair in the Palace of Electricity, section 5, space 28.

The Growth of the Soft Coal Industry.

To show what an immense figure the soft coal tonnage has reached one has but to regard some recent figures. The production of bituminous coal in the United States last year was 285,000,000 net tons, an increase over 1899, five years ago, of 94,000,000 tons, and an increase over 1893 of 155,000,000 tons, or much over 100 per cent. The present year will probably show a falling off, but not nearly so much as some people think. There are many who take a narrow view of the trade, and because orders are not rushing in think there is "nothing doing." They even seem to overlook the regular trade, which they themselves are supplying, and which runs along quietly and in steady volume. Certain it is that the tonnage of the soft coal carriers as yet shows no material decrease as compared with the corresponding period of last year.

as the population of our country at that time will be at least 100,000,000. But the accelerating rate of growth and the enormous expansion of our industrial development, the wonder of the world, give reasonable ground for believing that ten years hence the United States will be mining much beyond 400,000,000 tons, and possibly not far from 500,000,000 tons a year.

The Board of Public Works of the city of Milwaukee, Wis., awarded the contract for the new 20,000,000-gallon high pressure pump for the water works to the William Tod Company, Youngstown, Ohio, for \$74,000, after bids had been called for three different times. The Filer & Stowell Company, Milwaukee, has commenced proceedings to enjoin the city from carrying out the contract on the ground that the clause requiring that the company receiving the contract shall operate under the eight hour a day rule is contrary to law. One of the interesting features of the situation is that the city attorney, who will be called upon to defend the city in the action, has repeatedly informed the board that the eight-hour clause will not stand in law, and that it has no right to insist upon union labor in the performance of public contracts. In this case, the board was compelled to include the objectionable clause because of a resolution passed by the Common Council requiring that it be made a part of the specifications.

The Production of Iron Ore in 1903.

Report of the United States Geological Survey.

WASHINGTON, D. C., August 9, 1904.—The annual report of the United States Geological Survey upon the production of iron ore in 1903, compiled by John Birkinbine, has just been completed, and, through the courtesy of Dr. David T. Day, chief of the Division of Mineral Resources, the correspondent of *The Iron Age* is able to present the following advance abstract:

In the year ending December 31, 1903, the quantity of iron ore produced in the United States was 35,019,308 long tons. This is a decrease of 534,827 long tons, or about 1½ per cent., from the maximum of 35,554,135 long tons in 1902; but the quantity mined in 1903 is the second largest recorded, and is greater than the combined totals of Germany and Luxemburg and of the British Empire (the nearest competitors of the United States) in the year 1902. The data for 1903 for the countries named are not yet available, but the same comparison will probably prove true for that year also. The average iron content of the ore mined in the United States is also higher than that obtained in the two countries mentioned, and therefore the ore can produce a greater amount of pig iron.

Production for 15 Years.

The total yearly production of iron ore in the United States from the year 1889, when statistics were first collected by the United States Geological Survey, to the close of the year 1903 is as follows:

Year.	Quantity. Long tons.	Year.	Quantity. Long tons.
1889.....	14,518,041	1897.....	17,518,046
1890.....	16,036,043	1898.....	19,433,716
1891.....	14,591,178	1899.....	24,683,173
1892.....	16,296,666	1900.....	27,553,161
1893.....	11,587,629	1901.....	28,887,479
1894.....	11,879,679	1902.....	35,554,135
1895.....	15,957,614	1903.....	35,019,308
1896.....	16,005,449		
Total for 15 years.....			305,521,317
Average for 15 years.....			20,368,088

The average of the annual production of iron ore mined in the United States in the last 15 years exceeds the maximum output of any other country in any one year, the maximum production for Germany and Luxemburg being 18,964,294 metric tons in 1900, and for Great Britain 18,031,957 long tons in 1882.

The iron ore obtained in 1903 came from 22 States and 2 Territories, Vermont and Montana reporting no ore mined in 1903, and Nevada being added to the list.

In 1903 the quantity of red hematite mined in the United States was 30,328,654 long tons, or 86.6 per cent. of the total for the country, a decrease of 203,495 tons, or about 1 per cent., from the 1902 production of 30,532,149 long tons. Minnesota contributed over one-half of the red hematite ore, followed in order by Michigan and Alabama, each of these States with the exception of Michigan showing an increase over the 1902 totals.

The total quantity of brown hematite mined in 1902 (3,305,484 long tons) decreased in 1903 to 3,080,399 long tons, a loss of 225,085 tons, or 7 per cent. Alabama was the most important contributor of this class of ore, followed by Virginia, West Virginia and Tennessee.

The production of magnetite in 1903 was 1,575,422 long tons, a decline of 113,438 long tons, or 7 per cent., from the 1902 total of 1,688,860 tons. The three principal States mining this class of ore are New Jersey, New York and Pennsylvania, ranking in 1903 in the order named.

The carbonate ores, the least important class, show an increase, the 1903 total of 34,833 long tons being 7191 tons, or 26 per cent., more than the quantity mined in 1902, 27,642 long tons. As in 1902, all of this class of ore was obtained in Ohio and Maryland.

The output of concentrated ore in 1903 was 259,469 long tons, most of which was magnetically separated, the remainder having been passed through fogs.

In 1903 there were also produced 73,264 tons of zinc residuum for use in the production of spiegeleisen and ferromanganese.

Lake Superior Region.

The district known as the Lake Superior region stands pre-eminent as a producer of iron ore, its annual output exceeding that of any foreign country and the average character of the ore being excellent. In the year 1903 there was obtained from the Mesaba and Vermillion ranges in Minnesota, the Marquette range in Michigan and the Menominee and Gogebic ranges in Michigan and Wisconsin, a total of 26,573,271 long tons of iron ore. Of this ore 51 per cent., or 13,452,812 long tons, was obtained from the Mesaba range; 15 per cent., or 4,093,320 tons, was won from the Menominee; 14 per cent., or 3,686,214 tons, was mined on the Marquette range; 13 per cent., or 3,422,341 tons, came from the Gogebic range, and 7 per cent., or 1,918,584 tons, was credited to the Vermillion range.

In addition to the above named ranges in the United States, which by common consent compose the Lake Superior iron ore region, a sixth, the Michipicoten range, was opened in Canada in the year 1900, but its product in 1903, 223,976 long tons, is not included in the above data. The total production of the Michipicoten range to the close of the year 1903 is only 815,152 long tons. The greater portion of this ore has been sent to the United States and is non-Bessemer in character.

The most recently developed range, the Mesaba, took first rank as a producer in the fourth year of its history, 1895. This position it has steadily maintained until now its annual output is equal to that of the other four ranges combined. All of the ranges, except the Mesaba, showed a falling off in production in the year 1903. The years of maximum production are: For the Marquette range, 1900; for the Menominee, Gogebic and Vermillion ranges, 1902, and for the Mesaba, 1903.

Interesting State Details.

Minnesota.—The iron ore mined in this State in 1903 (15,371,396 long tons), all of the red hematite variety, came from the Mesaba and Vermillion ranges in the Lake Superior region. The State shows an increase of 233,746 long tons, or about 2 per cent., over the 1902 total of 15,137,650 tons.

Minnesota has a unique record as a producer of iron ore. Until the year 1884, when the Vermillion range was first exploited in what was then a wilderness, no ore was mined in the State, but in that year the initial production of 62,122 long tons was obtained. The output has increased rapidly year by year. Mining on the Mesaba range began in 1892, since which time it has made marvelous progress, the State attaining the pre-eminence in the Lake Superior district in the year 1895, which it has since held. The State, as a whole, shows a yearly increase in the iron ore production from the time iron ore was first obtained in 1884 to the close of the year 1903, a period of 20 years. No other State in the Union has such a record. In addition, the known reserves of iron ore on the Mesaba range are greater than on any other of the Lake Superior ranges, and explorations are being prosecuted on both the Mesaba and the Vermillion ranges.

Michigan.—Michigan holds second rank as a producer of iron ore, with a total of 10,600,330 long tons, a decrease of 534,885 tons, or nearly 5 per cent., from the 1902 output. Of the 1903 total, 10,592,933 tons were red hematite, giving it second rank in this class of ore, and the remainder, 7397 tons, was of the magnetite variety. All of the iron ore obtained comes from the Marquette, Menominee and Gogebic ranges, which are treated collectively under the head of the Lake Superior region.

Alabama.—This State occupies third position as a producer of iron ore, with a total of 3,684,960 long tons, of which 2,779,691 tons were of the red hematite variety, and 905,269 tons were brown hematite. The total production in 1903 was 110,486 tons, or 3 per cent. greater than in 1902. All of this increase was in the red hematite ores, the brown hematites showing a decrease. The State occupied third position as a producer of red hematites and first of brown hematites.

Tennessee.—This State showed a falling off of 21,838 long tons, or 3.5 per cent., in 1903, when 852,704 tons were mined. The State contributed 481,515 tons of brown hematite ore and 371,189 tons of red hematite.

Virginia and West Virginia.—These two States (which

have been combined in order not to disclose individual statistics) in the year 1903 supplied 801,161 long tons of iron ore, a decline of 186,797 tons, or 19 per cent., from the 1902 total. Of this quantity 764,948 tons were brown hematite, 31,069 tons red hematite and 4604 tons magnetite.

Wisconsin.—This State produced 675,053 long tons of iron ore in the year 1903, a decline of 108,943 tons, or 14 per cent., from the 1902 total. Of the total production 646,042 long tons were of the red hematite variety and the remainder, 29,011 long tons, was brown hematite. This year witnessed the initial production of iron ore in the new Baraboo iron range, near the town of Freedom, in Southern Wisconsin. These deposits of Bessemer ore, within convenient railroad haul of the blast furnaces at Chicago, Ill., may prove an important adjunct to the ore supply of these furnaces.

Pennsylvania.—This State contributed 644,599 long tons of iron ore in the year 1903, being a decline of 178,333 long tons, or 22 per cent., from the 1902 total. Three classes of ore were mined in 1903; 426,637 tons were of the magnetite variety, 202,542 tons brown hematite and 15,540 tons red hematite. The decline is due almost entirely to the diminished output of one of the large mines, the Cornwall Ore Hills, to which Pennsylvania was indebted for its position as a prominent producer for a number of years.

New York.—In the year 1903 New York mined 540,460 long tons of iron ore, a decrease of 14,861 tons, or 3 per cent., from the 1902 total. Of this quantity 451,481 tons were of the magnetite variety, 83,820 tons were red hematite and 5159 tons brown hematite ore.

New Jersey.—All of the iron ore mined in New Jersey is of the magnetite variety, in which class of ore it occupied first place in 1903, with a total of 484,796 long tons. This was an increase of 42,917 long tons, or nearly 10 per cent., over the 1902 production. The construction of several modern furnaces has been the predominating and instigating cause of the increased output in New Jersey, and it is probable that an augmented production may be expected in the near future.

Colorado.—In the year 1903 the amount of iron ore mined in this State was 252,909 tons, being 40,388 tons, or 14 per cent., less than the 1902 production. Of this total 249,288 tons were of the brown hematite variety, the remainder, 3621 tons, being red hematite. The determination of exact statistics in regard to the iron ore mined in Colorado is difficult, as much of the ore comes from mines producing precious metals; but when iron ores do not contain sufficient quantities of silver, gold, lead or manganese to cause them on that account to be valued at or in excess of about \$12 per ton, and are used as fluxes by the smelters, they have been classed as iron ores.

Value of Iron Ore.

The total value at the mines of the 35,019,308 long tons of iron ore produced in the United States in the year 1903 was \$66,328,415, or \$1.89 per ton, an increase of 5 cents per ton, or 3 per cent., over the 1902 figures of \$1.84.

The selling prices of the Lake Superior ores, which form the greater portion of the United States total, have in late years been fixed by the Lake Superior Ore Association, and in the year 1903 these figures were the same as in 1902, as follows: A basis price of \$4.50 per long ton, free on board at lower lake ports, for old range Bessemer ores, guaranteed to contain 63 per cent. of metallic iron, 0.045 per cent. of phosphorus and 10 per cent. of moisture when dried at 212 degrees F. For old range non-Bessemer ores, free on board at lower lake ports, basis price \$3.60 per ton, guaranteed to contain 60 per cent. of iron and 12 per cent. of moisture. For Mesaba range Bessemer ores, free on board at lower lake ports, basis price \$4 per ton; guarantee, 63 per cent. of iron, 0.045 per cent. phosphorus, 10 per cent. moisture. For Mesaba range non-Bessemer ores, free on board at lower lake ports, basis price \$3.20 per ton; guarantee, 60 per cent. of iron and 12 per cent. moisture. These Mesaba non-Bessemer ores are divided into three classes, according to physical structure, with a differential of 15 cents between the first and second classes and 10 cents between

the second and third classes, or a total differential of 25 cents between the first and third classes.

The returns collated show that the highest average value at the mine in 1903 was placed on the Colorado iron ores—viz., \$3.12 per ton—and the lowest on Texas ores, \$1 per ton. Generally speaking, there were but slight changes in the various States between the prices which prevailed in 1902 and in 1903. Of the States comprising the Lake Superior region, Michigan reported the same average price as in 1902, \$2.40 per ton; Minnesota an advance of 17 cents and Wisconsin a decline of 1 cent from the respective 1902 valuations of \$1.58 and \$2.30 per ton.

W. L. C.

Census of the Fluorspar Industry.

WASHINGTON, D. C., August 9, 1904.—The mining of fluorspar has increased over 500 per cent. during the past decade, owing to the greater use of this mineral in metallurgical processes, especially in the iron industry, according to a special report compiled for the Twelfth Census, soon to be published. The first statistics of production were collected at the Eleventh Census, and these are compared with the statistics for 1902 in the following table:

	1902.	1899.
Quantity, short tons.....	48,818	9,500
Value	\$275,682	\$45,855

Of the 22 mines in 1902, 14 were in Kentucky, 5 in Illinois, 2 in Arizona and 1 in Tennessee. In these 12 years Illinois, which was the only State producing fluorspar commercially in 1899, has increased its production from 9500 to 18,860 tons.

In the fluorspar deposits of Illinois and Kentucky there is known to be a very large supply of this mineral, capable of meeting the demand for many years. As this overcomes one of the objections often advanced against using fluorspar in the smelting of iron—namely, that a constant supply of this mineral could not be depended upon—its use for this purpose should now increase rapidly. Thus far the larger proportion of the fluorspar mined has been used in steel works. Very little is used in blast furnaces or in the smelting of copper or other metals; for these purposes, and also in foundry work, its use will undoubtedly increase rapidly when its value as a flux is more thoroughly understood.

The average value per ton has varied from \$4 to \$8. The average was exceptionally high in the years 1896 to 1898, inclusive, reaching \$8.21 in 1898. In 1902 it was \$5.66; the prices reported for that year varied from \$2.86 to \$11.50 per ton, this higher value being obtained for the fluorspar mined in Arizona, which was used in California.

W. L. C.

Drawback on Type Metal.—The Treasury Department has decided that on the exportation of type metal, manufactured by the Great Western Smelting & Refining Company, Seattle, Wash., with the use of imported lead dross, a drawback will be allowed equal in amount to the duties paid on the imported lead dross so used, less the legal deduction of 1 per cent. In liquidation, the amount of imported lead dross which may be taken as the basis for the allowance of drawback may equal the quantity consumed, as declared in the drawback entry, after official verification of exported quantities, provided that in no case shall such amount exceed that sufficient to account for the constituent of the type metal in condition as exported which appears in the least proportion to the corresponding constituent of the imported lead dross by a comparison of the respective percentages in which the lead, tin and antimony are present in the imported and exported alloys.

The power production of the new central station of the Kansas City Electric Light Company is given in the following terms by E. A. Barth in the *American Electrician*: When run condensing, 225 watts are obtained per pound of coal, and when run noncondensing, 165 watts per pound of coal. The coal is a slack, having a calorific value of 11,000 British thermal units, and yielding about 17 per cent. ash.

Chicago Distributing Warehouse for Milwaukee Coke.

The Milwaukee Coke & Gas Company, which is now operating at Milwaukee a plant consisting of 80 Semet-Solvay by-product coke ovens, has completed its distributing warehouse in Chicago. This warehouse is 52 x 150 feet in area, two stories in height, and has a capacity of 500 tons of coke. Additional capacity for 500 tons in sheds on the outside will be arranged for.

The cars of coke which are shipped to Chicago from the Milwaukee ovens are switched into the ground floor of the warehouse, and the coke is elevated to the storage bins above by means of a vertical bucket conveyor driven by a gas engine. The coke is shoveled from the cars into the hopper of the conveyor. At the top of the conveyor is a spout mounted on a vertical shaft, which permits it to be swung into any of the various bins, a separate bin being provided for each of the different sizes of coke, these sizes ranging from pea up to large egg. Each of the bins is provided with a hopper terminating in a gate, which is held closed by a counterbalance weight and which is opened by pulling on a rope. Details of the hopper mechanism are shown in Fig. 1. To meet the demand for the delivery of coke in canvas bags, bagging hoppers are provided with the same method of regulating the flow of coke, and with long sheet steel chutes hinged to the hopper and provided at their ends with hooks on which the bag is held open. By means of this system coke can be bagged very rapidly.

The business of the company is about equally divided between its domestic department, which sells to residences, flat buildings, hotels, &c., and the foundry department, which includes foundries, forge shops and melters generally. The buyer has his choice of the following sizes: Foundry, large egg, small egg, range, nut, pea and breeze.

The company distributes its coke for small consumers by means of an autotruck, which it has recently purchased, and also by means of the ordinary coal wagons. The wagon or autotruck to be filled with coke is stationed underneath the chute serving the bin of the quality of coke required, as shown in Fig. 2, a rope is pulled, and in a few minutes' time the vehicle is full. Thirteen

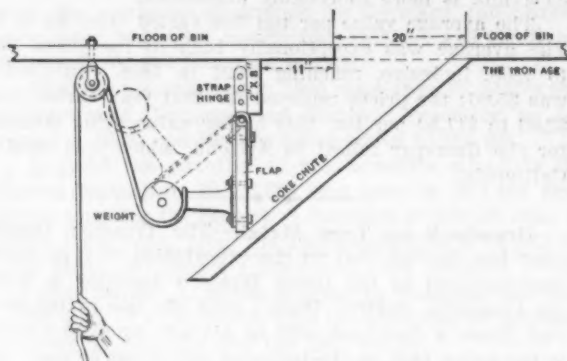


Fig. 1.—Arrangement of the Coke Hopper.

of these chutes give facilities for loading a large number of vehicles at the same time. The warehouse, which is at 221 North Branch street, on Goose Island, has 650 feet of team track, 150 feet being inside the building, and it also enjoys dock facilities. The autotruck used by the company is the first of a number which will be put in service. It was built by the Vehicle Equipment Company, Brooklyn, N. Y. This vehicle is driven by two electric motors and has a capacity of 5 to 6 tons of coke, according to size.

The trade to foundries having their own team tracks is handled direct from Milwaukee in carloads, but foundries and other melters not equipped with team tracks are provided with coal in truckloads from this Goose Island warehouse. It is to this wagon trade that the company looks forward to securing a very large tonnage. The fact that no adequate provision of this kind has been made heretofore to supply foundries with coke as they need it played an important part in inducing the company

to establish its Chicago warehouse and wagon delivery system. Foundry coke stored in the warehouse is held in bins on a level with the freight car floor to minimize



Fig. 2.—Autotruck Under the Coke Chute.

breakage from handling. Morton Otis is manager of Chicago sales.

The Standard Tin Plate Company's Products.—The Standard Tin Plate Company, Canonsburg, Pa., has brought out a grade of tin plate between common and best coke, having found many consumers who need a better grade than ordinary cokes, but are not desirous of using what are known generally as best cokes. A coke of the very highest grade is made which is named Pecon Best coke; the intermediate grade is the Pecon Extra coke, carrying a little less metal than the Pecon Best; the third grade is Pecon coke, which is the company's regular coke plate and which is guaranteed to be equal to any similar standard on the market and carrying the requisite amount of metal consistent with the requirements of a good ordinary coke tin plate. These grades are offered at the regular market price, with a differential of 10 cents basis additional for the Pecon Extra and 20 cents basis additional for the Pecon Best from the price of Pecon coke. The regular differentials are charged on three sizes and base weights. Samples of the three grades above described are being distributed to the trade. The company also manufactures charcoal bright plates of the regular grades, from 3 pounds to 7 pounds of coating per base box, and a full line of terne roofing plates in coatings to suit the requirements of buyers. Black plate is supplied in stove pipe stock, blue annealed enameling stock, galvanizing stock, show card stock, taggers iron, music disk stock and full finish for tinning.

Drawback on Turbine Wheels.—The Treasury Department has decided that on the exportation of turbine wheels manufactured at the I. P. Morris Company's works, Philadelphia, Pa., by the William Cramp & Sons Ship & Engine Building Company of the same place, with the use of imported shaft forgings, a drawback will be allowed equal in amount to the duty paid on the imported shaft forgings so used, less the legal deduction of 1 per cent. In liquidation, the weight of imported shaft forgings which may be taken as the basis for the allowance of drawback may equal the quantity consumed, as declared in the drawback entry, after official verification of exported parts, but in no case shall such weight exceed that of the imported shaft forgings in condition as exported as shown in the drawback entry, with 4 per cent. of the export weight added thereto as an allowance for valueless waste.

The New National Bolt and Rivet Header.

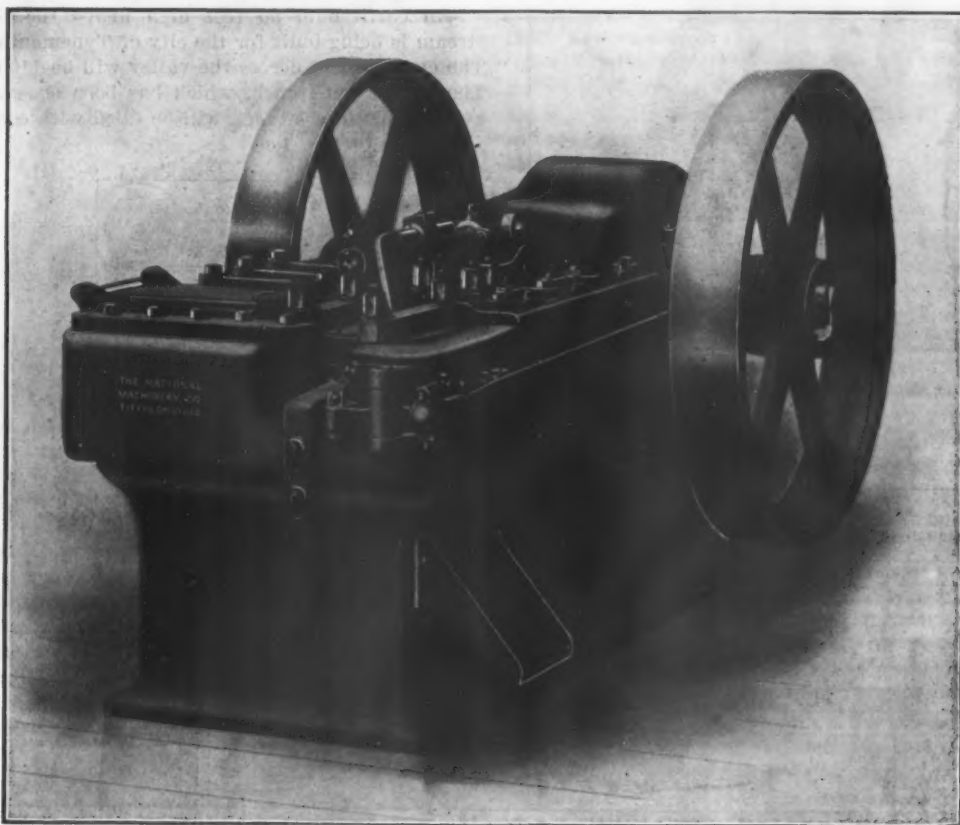
The manufacture of bolts by the single blow process has greatly increased, owing to the demand for large outputs at low cost. To provide better machines for this class of work the National Machinery Company of Tiffin, Ohio, has recently brought out a new line of continuous motion bolt and rivet headers, one of which is shown in the accompanying illustration. In these machines the fly wheels are keyed directly to the crank shaft, and a bolt or rivet is cut off and headed at one revolution of the fly wheel. The movement of the dies is so timed that, although they have ample gather for making all styles of bolts or rivets within their capacity, the grip dies are open during as large a part of each revolution as possible, enabling the machines to be easily fed even at an unusually high speed. Furthermore, by not gripping the stock longer than absolutely necessary, long life is insured to the dies, and a minimum amount of power is required to operate the machine.

The machines have very long semisteel beds, allowing

them from springing out of position and allowing single blow work to be produced with practically no fins under the head. The movable grip slide is of extra length, and as it has bearing surfaces on both sides of the wedge slide its alignment is accurately maintained and all tendency to cramp is eliminated. The action of the wedge slide when closing the dies also tends to keep the grip slide in contact with the front of the bed, insuring contact of the shearing surfaces, thus enabling the blanks to be cut with good clean edges.

In the operation of these machines on single blow work the bar is heated for a length of 4 or 5 feet and is fed through a steel bush in the face plates and against the movable stock gauge. The blank is next cut off by the closing action of the movable grip die and is held securely in the groove in the dies, while the heading tool moves forward and forms the head. The dies then open and a kick out ejects the finished work.

These machines are furnished either for hand or automatic feed, although the hand feed is recommended as being the most serviceable. The machine illustrated



THE NATIONAL MACHINERY COMPANY'S NEW BOLT AND RIVET HEADER FOR FORMING HEADS WITH A SINGLE BLOW.

the use of long slides to give ample wearing surfaces and maintain correct alignment. The heading slide is driven by a crank on the main shaft, and the grip die slide is operated by a sliding wedge actuated by toggles connecting to the heading slide. Only three toggles are used. These are bushed with phosphor bronze and move on large hammered steel pins.

The heading and grip slides are provided with wearing plates to take the wear off from the bed, and have adjustable liners both at the top and sides for accurately aligning the slides. An automatic relief prevents damage to the machine in case cold work is accidentally caught between the grip dies. After the relief operates it is automatically set on the next back stroke, so that the operator may proceed with his work without stopping the machine. On account of the high speed at which these machines run special attention has been given to the oiling system, and, as practically all of the working parts are covered, ample protection is provided against dirt and scale.

The wedge grip is an excellent feature, as it affords a solid backing the full length of the grip dies, preventing

them from springing out of position and allowing single blow work to be produced with practically no fins under the head. The movable grip slide is of extra length, and as it has bearing surfaces on both sides of the wedge slide its alignment is accurately maintained and all tendency to cramp is eliminated. The action of the wedge slide when closing the dies also tends to keep the grip slide in contact with the front of the bed, insuring contact of the shearing surfaces, thus enabling the blanks to be cut with good clean edges.

A new process for hardening iron has been developed by two Prussian inventors, according to the *Engineer*. It consists in adding to iron a small percentage of phosphorus combined with a large amount of carbon. The iron is heated in a tempering powder consisting of bone dust, to which are added 300 grains of yellow prussiate, 250 grains of cyanide of potassium and 400 grains of phosphorus. The receptacle is closed and luted with clay, and raised to a clear red or white heat. The material treated is then taken out and plunged, while still hot, into a warm bath. It is claimed that this will harden the surface of a piece of iron weighing 400 pounds to a depth of about 0.04 inch, and that the iron can neither be cut nor chipped by the best steel used and that it can be readily welded.

The Watson Automatic Wire Forming Machine.

A new wire forming machine for manufacturing paper holding clips is shown in the accompanying Fig. 1. The clips are made at the rate of 85 a minute, and are of the form indicated at the upper right hand corner of the engraving. A feature of the machine is the adapta-



Fig. 1.—The Machine and the Clip Which It Makes.

clip from the machine. The wire passes behind the former and the cutting off slide, and the center pins of the rotary benders ascend simultaneously. The ends of the wire are caught by the shoulders on the upper surfaces of the benders and are brought around the pin and lapped back until they are parallel with the direction of the feed. The pins next disappear and the former head is drawn back, taking with it by means of a nose the center section of the wire and forming the square bends. The same movement brings the two ends of the wire across the bend. The head then moves forward and ejects the clip into a chute which is provided to receive it.

A single shaft furnishes the drive for all of the movements. One cam actuates a rack meshing with a pinion on the lower end of each rotary former, another operates the former head, while a third operates the cutting off slide and the center pins. The wire straightener is a simple device, consisting of a number of pins, instead of rollers, which well answer the purpose, due to the lightness of the wire. The machine is built by J. H. Watson, Worcester, Mass.

An earth dam 90 feet high above the bed of the stream is being built for the city of Tynemouth, England. The embankment across the valley will be 1100 feet long. The foundation trench, which has been excavated to an average depth of 30 feet, will be filled with concrete, and

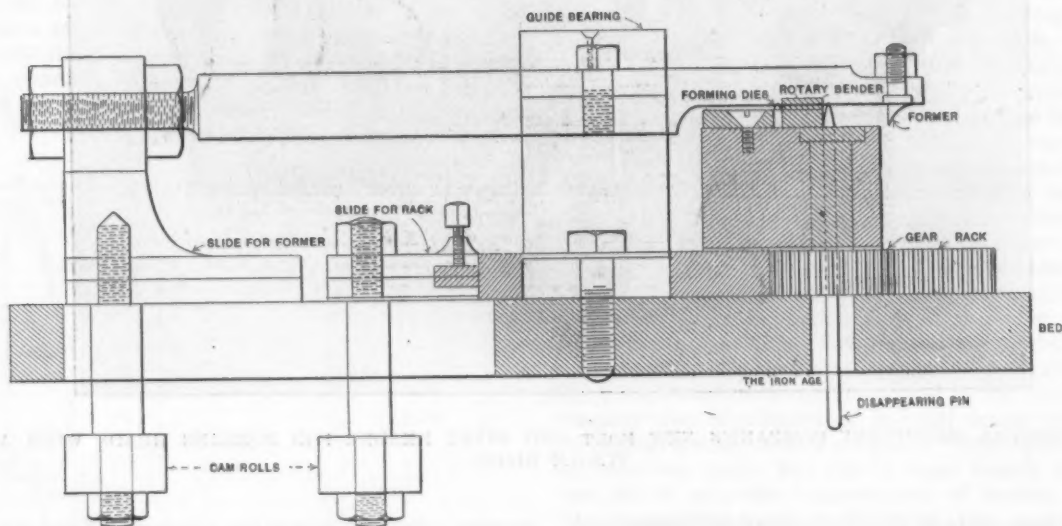
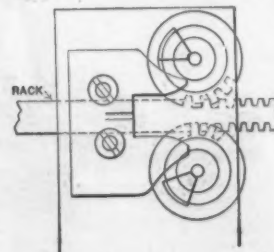


Fig. 2.—Detail of the Wire Forming Mechanism.

tion of rotary benders and a disappearing pin, the action of which will be described later.

The process for the formation of each clip consists of cutting off a piece of required length from the hardened spring wire stock, bending the ends backward to form two round bends, and then bending two square bends near the center and looping the ends back across the middle part, so that the two loops touch and the ends lie flat on the straight middle section. This is accomplished by means of one slide and the rotary benders in a manner which will be best understood by referring to Fig. 2. The wire, after being straightened, is brought into position by a dog feed, seen on the front of the machine in Fig. 1, which is operated by a connecting rod from a crank disk on the driving shaft. The former, which is operated by a cross slide, is seen in its extreme forward position, where it has been left after ejecting the last completed

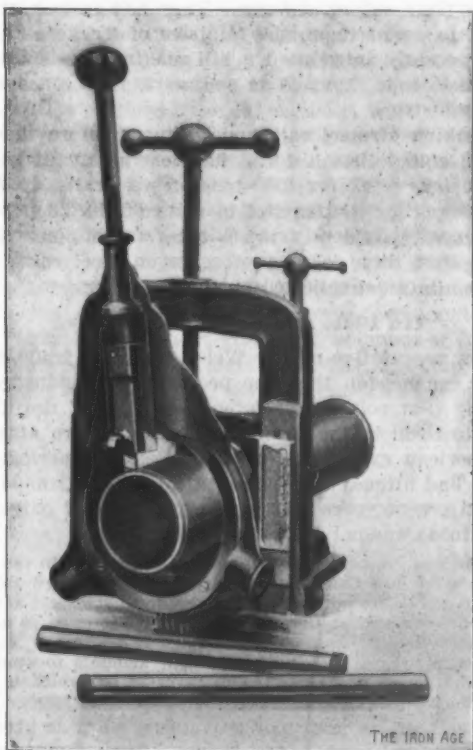
above the surface the dam will have a puddled clay core. The width of the dam at the base is no less than 600 feet. The reservoir will have a maximum depth of 80 feet, and a capacity of about 850,000,000 gallons. The stream has been diverted through a tunnel 15 feet in diameter and 650 feet long, which will later be used to carry off the overflow, and also the compensation water.

A compass which automatically registers minute by minute has been patented by M. Heit, a French inventor. The compass card is fixed on a steel pivot, which rests on a fixed agate, instead of having at its center an agate resting on a fixed steel point. The fixed agate is immersed in a drop of mercury, which serves as a conductor for the electric current that causes the movements of registering. By the use of this instrument it is claimed that a ship's officers have a complete record of a voyage.

The Wilson Pipe Cutter.

A new and inexpensive machine made expressly for cutting cast iron pipe, but equally well adapted for cutting wrought iron pipe or metal tubing in any form, is illustrated herewith. In principle of action it resembles a lathe, and, in fact, might quite properly be called a hand lathe. The design of the tool allows for suitable take and clearance, so that it produces a clean cut, leaving no burr on the pipe, consequently it is unnecessary to file the pipe to start the die for thread cutting. Unlike the ordinary disk cutter, it does not crush the pipe but cuts the metal out in the same manner as does a lathe tool. These two features of the tool are important advantages, as they contribute to the attaining of perfect joints in the pipes with the least expenditure of time and labor.

The machine is also provided with a quick centering



THE WILSON PIPE CUTTER.

attachment, and when making up pipe can be used as a vise as well as a cutter. It is simple, strong and durable, easy to operate, and has no parts likely to get out of order. Undoubtedly it will be found a valuable machine for plumbers, gas fitters, contractors and machine shops generally. The cutter illustrated weighs 65 pounds, and will handle pipe from 1 to 6 inches in diameter. The Wilson pipe cutter is manufactured by the Curtis & Wilson Machine Company, West Brighton, Staten Island, and the sole agents are Goldsborough & Smith, 72-76 Trinity place, New York City.

Harnessing the wind to generate electricity for farm use is no longer a novelty. The first of these wind mills were used experimentally to generate electricity for lighting houses and barns; success has since stimulated attempts to use them for more ambitious projects. To-day a good many are being run to generate power to operate small motors. The use of wind mill power for generating electricity was tried successfully two years ago in Europe, and now at Hamburg and Leipsic are electrical plants which derive their motive power entirely from the wind. The wind mills are strongly built, and are designed to take the wind at any angle. The regulation of the motor is effected by an automatic switch, which cuts out the battery when the wind falls to a low pressure.

Central American Notes.

SAN JOSÉ, July 25, 1904.—The latest definite news about the Nicaragua railways now building is that Minister Zelaya says that he has been promised several millions by American capitalists to build the national lines from Corinto to the lake at Granada and from San Miguelito to Bluefields on the Atlantic. He further states that the grade will be at most a $2\frac{1}{2}$ per cent. grade, and that, other things being equal, the rolling stock, rails and general equipment will be bought in the United States.

Guatemala now has over 5000 km. of telegraph and telephone lines, with long distance lines to Mexico, Salvador and Belize. There is also a fairly good weekly mail service to the United States and Europe. Costa Rica's mails, via Limon, a port on the Atlantic, are also weekly, while that from the port of Punto Arenas, on the Pacific, is semimonthly and not very satisfactory. Nicaragua has a weekly line from San Juan to New Orleans and Mobile, as also has Honduras, via Puerto Cortez, but the capital, Tegucigalpa, is still six days distant, as the railroad is only built for about 130 miles.

Señor Ugarte, Minister from Honduras, lately tried to settle the railroad questions which have arisen with England, France and the United States, but they could not come to an agreement, so that all work is now suspended until the Honduras Congress acts. All enlightened Honduranians understand that their country must have an interoceanic line to develop its many and very rich resources; in truth, within a year after getting the railway through Honduras could produce iron, lead and silver ore to the value of \$15,000,000 to \$25,000,000, to say nothing of bananas, cotton, coffee and rubber. For centuries Honduras was only known for mahogany, gold and silver. At present, 80 per cent. of its business, both import and export, is in the hands of German firms, principally located at Amapala, Puerto Cortez, Tegucigalpa and Trujillo. About 40 per cent. of the imports come from the United States in American bottoms.

The Republic of Salvador, on the Pacific, has no Atlantic coast, and is now in treaty with Guatemala to build a line of railroad from the Paz River through Zacapa to the Atlantic Ocean at Puerto Barrios. Part of this line could be used for the Pan-American Railroad, and would place Salvador but a few days from the American markets. The new line from Cocales to Mazatenango is building rapidly, and the American company took the concession from the Guatemalan Government without a subvention. All railway material for this line is coming over the Guatemala Central Railroad, also owned by the Harriman interests. The 265-foot steel bridge over the Incienso Cañon, in the vicinity of Guatemala City, is being put up by foreign mechanics. By this route San Juan and Antigua will be many miles nearer.

General Manager Williamson of the Keith & Van Horne Railway interests has arrived at the capital after inspecting the road from El Rancho.

As a result of the determination of the Common Council of Milwaukee, Wis., to insist on the eight-hour a day rule in letting a contract for a new pumping engine for the water works, the third opening of bids by the Board of Public Works, Friday, July 29, was unsatisfactory, only one bid being offered, which was by the William Tod Company, Youngstown, Ohio, for \$74,000, which was \$9600 more than the company's first bid. The William Tod Company agreed to the clause concerning the eight-hour rule, but was apparently not anxious to put in a bid at all. The members of the board are much disappointed at the turn affairs have taken, as there is pressing need for the new pump. They are of the opinion that the pump should not cost over \$60,000, and deferred awarding the contract until another meeting of the Common Council, when the whole matter will be reconsidered.

Texas seems destined very shortly to take rank as the State having the greatest mileage of railroad main track. According to the *Railway Age*, the mileage in that State on June 30, 1904, was 11,503, only 14 miles less than that of Illinois, which has hitherto been far in the lead of all the States.

Canada and the Chamberlain Commission.

The Barb Wire Trade.

TORONTO, August 6, 1904.—In the report of the Chamberlain Tariff Commission's inquiry into the iron and steel trades Canadian trade conditions come in for several references that are noted with interest in this country. For example, one witness cited as an instance of American competitive methods in Canada the agreement under which the organized wholesale hardware trade of Canada deals with the chief wire producing company in the United States. He said:

The United States sells in Canada upward of 20,000 tons of barb wire per annum, which it distributes through the medium of the Canadian Hardware Association. At the commencement of each season the United States Steel Corporation enters into an agreement with the Canadian Hardware Association binding the members to buy their barb wire from it. The United States Steel Corporation guarantees the Canadian jobbers a profit of 10 per cent., and handles the trade with dispatch and in a thoroughly satisfactory manner. The price charged is one at which English manufacturers would be quite prepared to do business. This, however, is impossible, for any attempt to get a jobber to buy elsewhere than from the United States results in reprisals of a serious character in the shape of an attack on the jobber's customers and refusal to supply the jobbers with barb wire. There are very large quantities of barb wire consumed in Canada, and the trade having grown under the hand of the United States manufacturers, they are in a position to supply the enormous requirements. The English manufacturers as at present situated could not supply these large quantities, and that puts another strong weapon in the hands of the United States suppliers because if they refuse to supply the big jobbers with barb wire they would have difficulty in getting their supplies at all.

It is a fact that there is an arrangement between the American Steel & Wire Company and the Canadian Association of Hardwaremen, and it is true that the bulk of the barb wire sold in this country comes from the United States. But whatever understanding an American manufacturing concern and an association of Canadian jobbers may come to, the market here still remains open to competition. Barb wire is on the free list. If English makers, as this witness says in one part of his testimony, can sell here with profit at prices no higher than those obtained by the American Steel & Wire Company, they ought to be able to get a fair share of the trade. For if they cannot get the orders of members of the Canadian Hardware Association they can do as the American Steel & Wire Company is said to be ready to do in a like contingency—make "reprisals" by selling to the customers of the Canadian wholesalers. The Canadian retailers, to whom the wire goes directly from American mills at the order of Canadian wholesalers, are not bound to any body by any agreement, and, as has already been said, barb wire is on the free list.

As a matter of fact there is a very considerable quantity of barb wire sold here with whose production no works in the system of the United States Steel Corporation has anything to do. Independent American companies sell here, going directly to retailers, or doing business through agencies. It is a trade no longer solely controlled or controllable by hardware jobbers. It is becoming almost a separate trade, owing to the great demand that has developed in the Canadian West, where the area under cultivation is fast extending with the increase of immigration and with the rapidly growing wealth of the farmers.

That the trade is not completely at the disposal of any association is shown by the fact that the output of the Canadian factories is increasing, though it is to be said that that is subject to an arrangement with the American Steel & Wire Company for rods, and by the fact that both German and British makers are still doing business here, the former having the larger share.

British makers cannot have the assistance of a tariff preference to capture the barb wire trade here; for there can be no preference where there is not a general duty, and a duty on barb wire would be too direct a tax on farming to be thought of by the Government.

"Dumped" Canadian Pig Iron.

One witness referred to the Canadian pig iron "dumped" on the British market, and said that if that

trade were developed to any extent—being supported by bounties—it would be a cause of complaint. Canadian pig iron is sold abroad for the reason that its conversion into finished products is not liberally protected. If, for example, there were a high duty on steel rails the iron would probably all be consumed here. Britain would then be relieved of the "dumping" of that Canadian raw material, but would also have to pay a stiff toll to sell rails here, a business of which she now has a good proportion. Canadian iron that is cheap enough—as a consequence of the bounty—to undersell her own assists her to produce rails at a cost low enough to make them salable on this market, apparently at a profit. Of another Canadian bounty British manufacturers will have some advantages. It is that on wire rods. When this was first adopted it was confined to rods which should be turned into wire in Canadian factories. But as the American Steel & Wire Company had secured the rod market here the Canadian manufacturers could not dispose of their output at home. They had to look abroad. Hence, to assist them, the Minister of Trade and Commerce recently introduced a bill making the bounty applicable to rods exported as well as to rods consumed in home industries.

Speaking of steel rails, one witness before the commission stated that his firm had lost a Canadian order the previous week for 1000 tons of steel rails, an American competitor getting it "in spite of the 33 per cent. preference." Evidently the witness forgot, or was unaware, that there is no preference on steel rails, there being no duty yet collected on them.

Tin Plate and Galvanized Sheets.

A representative of the Welsh tin plate trade stated to the commission that the people in his industry felt strongly that colonial preference may be of the utmost value to them in the future, "because we are afraid of an American export of tin plates." The Americans, he added, had already sold some tin plates in Canada, and have in recent years sent large quantities of galvanized sheets into Canada. He said, in addition:

At present we have a preference in Canada, but in the material we send into Canada—tin plates and galvanized sheets—the preference does not amount to very much. We get a 50 per cent. rebate as against Germany and 33 1-3 per cent. as against everybody else. . . . The preference is not really substantial, because, the duty being so small, it amounts to something like 3 shillings 9 pence per ton in favor of us, which is not a large amount in galvanized sheets.

As neither tin plate nor galvanized sheet is produced in Canada, and as there are large industries here making use of both as raw material; moreover, as the home demand for articles into which they enter is enormous, it is improbable that any increase will soon be made in the general duty. Hence there does not seem to be much chance of an increased preference to British producers of tin plate and galvanized sheet. According to this witness, a preference less than 10 shillings a ton would be of little service.

Dumping in Canada.

In accounting for the progress of American competitors on the Canadian market, dumping is often mentioned by the witnesses. Thus in the statement submitted by J. Stephen Jeans, secretary of the British Iron Trade Association, it is shown that British makers supply less than half as much of the Canadian iron and steel imported as the United States does. He remarks:

I do not hesitate to say that if the Canadians had been charged the same prices as were nominally charged on the other side of the line, hardly any American iron and steel would have found its way into Canada during the last five years in competition with the cheaper prices quoted for British material.

One of the ten points to which he particularly directs the attention of the commission is that the dumping of foreign iron in British and Colonial markets has been a serious handicap to British exports, "as witness the case of Canada."

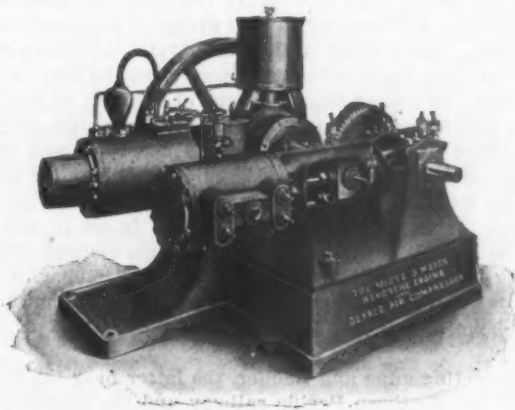
If the views thus expressed are correct, it will be interesting to see the effect of Mr. Fielding's new anti-dumping provision, under which as much as 15 per cent. ad valorem can be imposed as a surtax on dumped imports that are dutiable. That provision, of course, cannot make any difference in the United States' sales of

steel rails, barb wire and sundry other articles that are on the free list, but if it proves workable it should be a considerable make-weight on the trade in other American articles of iron or steel. That it will prove workable in all cases is doubted. It certainly is not expected to make any such transfer of trade to British iron and steel industries as Mr. Jeans would evidently expect to follow from the elimination of American dumping here. However this anti-dumping clause may work, it is to apply to all. Its penalties are as much for the British offender as for the American. Mr. Jeans does not seem to admit the possibility that the British may have been doing a little dumping here themselves.

C. A. C. J.

The Oil Engine in Building Construction.

In the work of erecting steel buildings the oil engine has become a valuable adjunct to provide power for compressing air for the operation of pneumatic tools, especially riveters. On account of the dangerous nature of its fuel a gasoline engine would not be permitted on such work in most cities, and a steam compressor is necessarily rather expensive, as it requires almost constant attention on the part of an engineer, takes up more room, and, being heavier, is more costly to set up. The accompanying illustration shows a neat set, consisting of a Mietz & Weiss kerosene engine, manufactured by August Mietz, 128 Mott street, New York City, mounted upon the same base with a Clayton air compressor. A bronze pinion on the engine shaft meshes with a large gear on the compressor, affording a very smooth running transmission. The engine is of 10 horse-power and drives an 8 x 8 inch compressor, giving 70 cubic feet of free air per minute against 80 pounds pressure. The outfit is in operation at the building now being erected at Park avenue



A MIETZ & WEISS KEROSENE ENGINE GEARED TO A CLAYTON AIR COMPRESSOR.

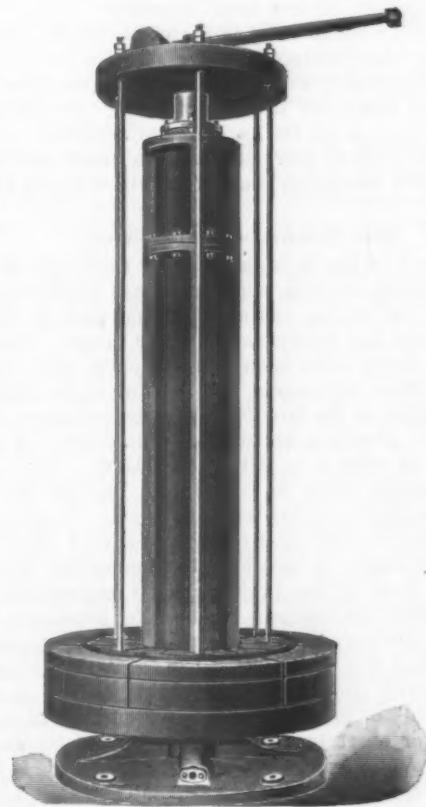
and Forty-second street, New York City, by Ritchie, Brown & Donnelly. It is stated that the compressor provides ample power for six pneumatic riveters with an oil consumption of from 7 to 7½ gallons per ten-hour day.

The report of the New York State Banking Department for the year ending July shows the usual substantial increase in the resources of the savings banks and amount due depositors. The increase in the total resources was, in round numbers, \$53,700,000, bringing the total to the enormous figure of \$1,275,000,000, and in the amount due depositors of \$54,670,000, with a total of \$1,160,000,000. The total of 2,400,000 depositors have \$38,000,000 of interest credited to them.

Germany's foreign trade for the first six months of 1904 showed imports of \$795,000,000, an increase of \$25,750,000 over the corresponding period of 1903; and exports of \$627,000,000, an increase of \$21,250,000. The great increase in imports was in cotton, \$12,000,000, and grain, \$5,000,000. Machinery and implements lead in the increases of exports with \$5,750,000; cotton goods, \$5,500,000; grain, \$3,750,000, and wool and woolen goods, \$3,000,000. The iron exports of the Empire dropped \$3,000,000.

The Waterbury Farrel Accumulator.

Thorough and constant forced lubrication of the step bearings of steam turbines is invariably imperative and not infrequently other high speed machines require lubrication under pressure. The Waterbury Farrel Foundry & Machine Company, Waterbury, Conn., is putting on the market an accumulator, the function of which is to provide a reserve supply of oil under pressure in case of failure of the oil pump. It is equally well adapted



THE WATERBURY FARREL ACCUMULATOR

for storing oil or water under pressure for other purposes, although especially intended for use in connection with turbo-generators.

The accumulator shown in the accompanying illustration is built for a pressure of 275 pounds. Others designed for storing oil at a pressure of about 2000 pounds are being built for one of the large manufacturers of steam turbines. The device consists of a cylinder containing a ram 6½ inches in diameter, having a stroke of 8 feet. The ram extends through the top of the cylinder and carries a ring connected by vertical rods with a lower ring for supporting the pressure producing weights. Oil is introduced to the apparatus by a pump through a 1-inch opening, which may be seen at the base of the cylinder. As it is forced into the cylinder it raises the ram, and with it the weight ring. The lever on the top ring automatically cuts off the supply from the pump when the accumulator is full, either by closing the steam supply to the pump, throwing a belt, closing a by-pass valve or other means, depending on the kind of drive. The accumulator has a capacity of 3185 cubic inches of oil, the pressure upon which remains uniform throughout the delivery until the cylinder is entirely drained.

The cylinder is greater in diameter than the ram to allow freedom of movement of the latter, the only close fit being in the stuffing box at the top of the cylinder. The pressure capacity of the accumulator may be varied by changing the weights on the lower ring. The apparatus is 52 inches in diameter at the base and the extreme height with the ram at its uppermost position is 20 feet. The weights themselves weigh 3785 pounds and the total weight of the accumulator is 13,265 pounds.

The Copper Mines of Shasta County, Cal.

BY DWIGHT E. WOODBRIDGE.

In northern California, almost under the shadow of glorious Mount Shasta, which rises from the mass of smaller peaks ramp and ramp into the blue, are copper mines that produce more value than any other mines of the State. Their annual output is more than double that of any other mineral county of California; indeed, the product of the Keswick smelters of the Mountain Copper Company, Limited, exceeds twice the value of the total mineral product of the next important county. Since copper mining began in that State \$30,000,000 worth of copper has been produced, nearly all of which has come from Shasta County's mines. Aside from the Iron Mountain mines there are in Shasta County the Bully Hill mines of Capt. J. R. De La Mar and associates, and numerous prospects of more or less hope. Over half the silver mined in California comes from these mines as a by-product.

The Mountain Copper Mines.

The days of the Mountain Copper Company are probably numbered—that is, exploration has quite thoroughly developed the bottom and sides of that part of their ore deposits that are remunerative under present conditions. Diamond drills have been worked until quite recently exploring these ore masses, and it is calculated that there are remaining in the Iron Mountain deposit about 450,000 tons of ore, averaging about 5 per cent. copper, or a gross value at 10 cents a pound of \$4,500,000. North of the Iron Mountain mine is the Hornet deposit, on which exploration has been carried out for some time by drills, &c., and this is estimated to contain a very much larger tonnage of lean ores, that may in time become remunerative. In view of the probable early exhaustion of its main deposits, the company has been for some time amortizing its capital account, but this is now stopped, for reasons that will be stated below. The Mountain Copper Company probably stands alone among American copper mines of prominence in the assurance of an early cessation of operations upon its important lenses.

The ground upon which Iron Mountain mine is located was first acquired as agricultural land, and is about as valuable for that purpose as many thousand other acres surrounding the company's smelter, claimed to be farming land by the owners. Some ingenious residents have been making a living for years by securing these mountain farms and then selling out to the company upon the ground that their agriculture was ruined by the sulphur fumes from the Keswick smelter. They have even secured the assistance of the United States Government, which attempted to enjoin the company from the operation of its plant. A mere cursory examination of these farms would have kept the Government from becoming a party to any such unholy scheme. However, the company has been compelled to adopt another method of treatment, and will soon be saving its fumes. These mines were first opened for silver and gold in the great gossan outcrop that towers above the present workings. It was in 1896 that the present company was organized. Its chief stockholders are Wm. Keswick, A. Frewer and other Englishmen, and its main office is in London. Great difficulty was experienced in the early days on account of the refractory nature of the ore, which carries a considerable percentage of zinc, and its abandonment was seriously considered. But Lewis T. Wright, until very recently general manager, worked out methods of treatment that proved practicable, and the property has been profitable and a very important producer of both copper and silver, and of gold also, on a smaller scale.

The Iron Mountain ore body was an almost solid mass of sulphides in lenticular lenses about 600 feet long, 100 to 400 feet wide, and 500 feet deep. It was covered by an iron cap, which had resulted from the oxidation of the sulphides, and this extended to the depth of 100 feet, with no altered ore beneath it and with the line of demarkation between the gossan and the sulphide plainly marked and abrupt. On the steeper slopes of the sharp hills about this property the gossan has been considerably eroded and the ores lie nearer the surface. The ridge

forming Iron Mountain rises a thousand feet above the streams on either side, which are sunken deep in sharply eroded channels. There is a tremendous rainfall. For each of the two past seasons this has amounted to about 80 inches, and there are many days of from 3 to 4.5 inches each. One day last season 9 inches fell. This, to be sure, has a very marked effect upon erosion. The gossan formation of Iron Mountain is about 300 feet wide and its perpendicular walls rise high above the top of the slope into which the tunnels of the Mountain Copper Company are driven.

This ore is chiefly chalcopryite with pyrite and spalerite, without chalcocite, and under an oxydation of about 100 feet. It occurs in altered rhyolites along planes of crushing and fissuring produced by uplift. The walls are talcy, and brecciation extends above the sulphides, all of which adds to the difficulty of operation. The ores are elongated flat lenses in shear zones which strike northeast and are nearly vertical. They are highly impregnated with sulphur and there have been many and severe underground fires. Indeed, the mine is still on fire, but the trouble is local and under good control. Tight fire walls of concrete with steel doors prevent its spread by separating the mine into five compartments. Mining is carried on carefully, so that air shall not be admitted to the hot sections of the property. Mountain ore averaged last year a trifle under 5 per cent. of copper, and the year before slightly higher. Mining is by the square set system on three levels, and all openings are filled back solid with waste rock quarried on the surface and dropped down. The ground is very heavy, especially when the gossan gets wet, and an enormous amount of timber is required. Formerly the mine ore was trammed by hand, but this has been superseded by electric trains. Ore is taken from the various levels inside the mine to a winze, which conveys it down to the tram road level in a connecting tunnel. Ten machine drills are used; fans thoroughly ventilate the mine, and the property underground is well equipped for economical operation. Everything is electric driven. Launderers conduct the mine water hither and yon about the face of the cliff, and the copper sulphate held in solution is precipitated, and forms an important part of the smelter charge.

A little more than one year ago a serious and very warlike strike, that had closed the entire plant for some months, was successfully overcome, and the mine was reopened. It was found with the stopes fallen in and in very bad shape under ground. Some time elapsed before mining could be conducted at normal costs and with desired results. The mine now employs 350 nonunion men, in 10-hour shifts, and produces about 4000 tons of ore weekly.

Connecting mine and smelter, the latter near the main line of the Southern Pacific railway and the Sacramento River, is a narrow gauge road over which all ore is transported. This road, though 11 miles in length, covers an air line distance of less than seven, and rises 2000 feet. It is a fine piece of engineering and the view from a seat upon an ore car, as one rises out of the valley and swings into sight of Shasta and other snow clad peaks, near and far distant, is one of the most beautiful that can be imagined. Shasta itself is like a bride veiled in snowy white. To prevent derailment of these cars they are built with a very short wheel base, plenty of clearance for wheel flanges and with a very broad tread. Loads of 4 or 5 cars of 50,000 pounds each are taken down regularly, and the locomotives have a hard time to get as many empties back up the line. The maximum grade on this line is 4 per cent., and the curvature is excessive.

The smelter is located in a narrow valley, hemmed in on both sides by the towering foothills of the coast range. The smelting plant consists of 11 turret roasters of the McDougall type, modified by Mr. Wright to meet the perplexing local conditions; of five water jacket hot blast furnaces, and of three converter stands, together with a complete sampling works. The company buys quartz gold ores for converter linings, and is prepared to treat what is brought to its doors. Power for both mine and smelter comes from the wires of the Northern California Power Company, whose generating plant is about 25 miles away, on a branch of the Sacramento River. Ores from the

mine are run onto a trestle above the charging floor, and on account of the small storage capacity there a considerable quantity of ore is stored above the smelter, on the opposite side of the gulch. Initial smelting results in a concentration from the 5 or 6 per cent. ore to a matte with copper tenor of 20 per cent. or thereabouts, while the second fusion matte is of about 50 per cent., which is poured into the converters and blown up to blister copper. This is refined electrically in the company's works at Elizabeth, N. J. From the first fusion furnace matte runs into casting molds on a slow moving link belt. Passing under water, it is chilled and solidified. The product of one furnace is granulated by a stream of water, and is later calcined in the roasting furnaces. Fines from the mine are roasted and then briquetted together with flue dust, calcined granulated matte and a lime binder. Hot blast stoves are fired with crude oil. Coke is costly and at present comes from Australia. It costs from \$12 to \$13 per ton. The smelter is modernly equipped with effective handling apparatus, and there are complete machine, blacksmith, boiler, pattern and other shops, in which most of the construction and repair work are done for the mine, smelter and railroad. In the several properties 1100 men are employed, and the weekly product is slightly under 250 tons of blister copper, or at the rate of 24,000,000 pounds a year. Recent newspaper reports that this property was to make almost anywhere from 40,000,000 to 60,000,000 pounds of copper this year are totally without foundation. Since my visit the mine reduced its force from the above figures and the output has been lessened.

Partially on account of the obnoxious fumes that disturb the sensitive nostrils of the inhabitants of that wilderness and ruin their crops of rock and timber, the company is to install an acid industry. For this purpose the retirement of capital was omitted in the last fiscal year. If this industry is carried to successful execution, it is probable that the Hornet ore body, of more than 6,000,000 tons of lean chalcopryite, may be treated at a profit, and the career of the company indefinitely prolonged. These ores contain from 47 to 50 per cent. sulphur, but no attempt has ever been made to save this valuable product. There has been so much litigation, so severe have been the costs incident thereto, and so much broader is the acid market becoming, that the Board of Directors recently decided to adapt their methods to the conditions. Recently some important deposits of the raw material from which acid fertilizers are manufactured were secured for this company, and one of the chief products of the new plants will be artificial manures. Careful estimates made by Mr. Wright and others have convinced the company that by combining copper mining and smelting and sulphuric acid manufacture, the saving in costs of copper alone will double the profit now made from these Iron Mountain ores, and if the acid can be made to show a profit either in itself or in the production of fertilizers, or both, the returns will be still more satisfactory. This operation is in line with the economical saving of by-products and elimination of waste that is becoming more and more a feature of American metallurgy. Works for this purpose will be located on San Francisco Bay.

The Bully Hill Mines.

Shasta County's copper belt is composed of a series of ore lenses arranged in the general form of a crescent, the western horn of which is at Iron Mountain. The convexity of this bow is toward the north, and near its center lie the Bully Hill mines of Capt. J. R. DeLaMar, which within a year or so have assumed considerable importance as copper producers. Ores of Bully Hill have a mode of occurrence similar to those of Iron Mountain, but there is a well marked but rather thin zone of sulphide enrichment below the gossan capping. This is characterized by the presence of chalcocite, bornite, chalcopryite and barite, with more or less pyrite and sphalerite. These Bully Hill mines have a total of underground development approximating three miles. As far back as 1853 these deposits were worked as gold mines, and ten years later silver was discovered in the croppings of what is now the Winthrop copper mine, but most attempts to treat these ores were failures and it was not until the

erection of the Bully Hill smelter, two years ago, that these ores were treated with any real success. Lenses in this part of the copper crescent are not so large as at the western horn. But they are richer, both in copper and in the precious metals, while they also carry more zinc, partially offsetting the higher enrichment. In this part of the district indications of copper have been found for a length of three or four miles and a width about half as great. But development work has been confined to a far smaller area, and most of this has been done by Capt. DeLaMar. The lowest levels of this mine are 700 feet from the surface and excellent ore shows in the bottom. In the mine are large bodies of low grade ore and the company has just erected an experimental concentrating mill and will endeavor to find a method of treatment adapted to these ores.

Treatment of the Bully Hill ores is by roasting in stalls, by McDougall calcining furnaces, by smelting in hot blast furnaces and blowing to blister copper of a very high tenor, about 99 per cent. This product is refined electrically in the DeLaMar refineries in New Jersey. Power for the entire plant is derived from the Northern California Power Company, and the use of this power both here and at the Mountain Copper Company's works is an instance of the splendid development of electric transmission in that part of the west, by means of which many great developments are possible that would otherwise be impracticable. From No. 3 level of the Bully Hill mines ore is transported 4000 feet to the roasting stalls, the fines being calcined in two McDougall roasters. Each of the two furnaces is 42 by 120 inches, with capacity of about 150 tons of ore. Smelting costs are high at this property, for everything has to be hauled overland fifteen miles from the nearest railway point, and freights are 50 cents a mile. Fuel and mining timber are also quite costly, but with whatever drawbacks there are this property is said to have already been quite profitable. The mining and smelting force numbers 350. A considerable increase in the copper output from this property is to be expected.

Near the eastern end of the crescent on which these mines are situated and about 9 miles from Bully Hill is the Afterthought district. Recently the Great Western Gold Company has consolidated a number of independent claims in this section and is now erecting a 150-ton smelting plant, as well as pushing development work underground. The geological formation here is similar to that elsewhere in the region, and the mines are said to be looking well. I did not see them.

A good deal of placer gold mining is carried on in this district, especially in French gulch and on Clear creek. At the latter one of the largest gold dredges ever installed in the West has recently been built. This dredge has 750 horse-power, driven from the Northern California Power Company, and is designed to handle from 300 to 400 cubic yards of gravel per hour. It is, of course, a suction dredge, and on account of the fact that it is expected to care for a considerable amount of heavy gold, which a slow suction will not pull, the intake pipe has a suction velocity of 25 feet per second. The pump will handle 25,000 gallons per minute and no gravel passes through the pumps. Gold is amalgamated and the mercury is to be kept bright by an alternating electric current of high voltage.

The Pressed Steel & Pulley Company.—William H. Latshaw, formerly vice-president of the National Tube Company, but who resigned some time ago, has organized a new company, to be known as the Latshaw Pressed Steel & Pulley Company, Allegheny, Pa. The company has purchased the plant of the Bradley Mfg. Company, and is installing new machinery in it preparatory to starting operations. The product of the company will be pressed and steel pulleys, and a novelty in the pressed steel line in the form of bells and gongs. It is claimed that the patents that the company has secured will enable it to turn out bells and gongs which, for tonal qualities, will exceed the finest alloys of metal that are usually cast into bells. The work of erecting steel presses is now going on, and when the works are in operation a large force of men will be employed.

The Iron Age

New York, Thursday, August 11, 1904.

DAVID WILLIAMS COMPANY,	- - - - -	PUBLISHERS.
CHARLES KIRCHHOFF,	- - - - -	EDITOR.
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The Quinquennial Census of Manufactures.

Announcement is made that preparations are under way for the quinquennial census of the manufacturing industries of this country, in compliance with a special act passed by the last Congress. This census is to cover as nearly as possible the business year of each manufacturing establishment most nearly conforming to the Government fiscal year ending June 30, 1904. Special efforts are to be made to confine the data gathered strictly to manufacturing processes.

The act under which this census is to be taken is one of those measures which so frequently pass through Congress without attracting much attention from those who should be deeply interested. We believe that if the manufacturers had comprehended what the act meant such opposition would have been manifested as to prevent it from passing. The manufacturers of this country have been subjected to increasingly inquisitorial processes at each successive census. They were driven almost to the point of exasperation by the schedules of that for 1900, but it now appears that a much more detailed classification of industries will be followed under the five-year census, especially in the preparation of special reports, than has been adhered to in preparing the decennial statistics. Efforts are to be made, we are told, to establish a new basis for comparison that will stand for several census periods to come. From this it is evident that still more searching questions are to be asked than under previous census investigations.

This simply means that a much greater mass of information is to be gathered. The reports will be still more voluminous than they have been, much more formidable to the general student, and still more likely than ever to find undisturbed resting places on the shelves of libraries. The census reports now in existence are of so little practical value that they are seldom used, except by those who are seeking to establish some peculiar theory. In such cases it is usual to find the deductions drawn so much at variance with the practical knowledge of business men that it is necessary to controvert the conclusions made by facts taken from business experience.

The original conception of census work has been very greatly expanded. It then covered only the enumeration of the population. This is, of course, always quite desirable. The expansion of census work into an inquiry into the extent of manufactures was reasonable and, within certain limits, this is also not only desirable, but is of considerable importance. The modern idea of census work, however, is extravagant in its view of the need for all kinds of statistics in connection with the subject taken up. Statistics can be so voluminous as to be confusing. They can be so comprehensive as to repel those who would like to analyze them and draw from them valuable conclusions, and under such circumstances are more likely to be used in a fragmentary way for the support of visionary theories. They would be of some value commercially if they were published very quickly after the close of the year which they cover. The great extent of the modern inquiry, however, carries

with it the necessity of the consumption of a great deal of time in getting the schedules properly filled, tabulating the returns and in preparing and printing the huge reports. Even now we are only receiving reports on some of the industries covered by the investigations of the last decennial census. It is fair to presume that the quinquennial census, taken on the lines which have been laid out by the census office, will hardly be in shape for distribution to the public until the next decennial period is upon us. It is a pity that this matter was permitted to slip through Congress without serious protest.

The Right of Eminent Domain.

The British Parliament proposes to make a very important extension of the right of eminent domain by giving to private corporations or individuals the power to acquire compulsorily any land needed for the purpose of electric generating stations. Under the law as it stands the right of eminent domain may be given in individual instances by legislative bodies where it is necessary for the better accommodation of the public, but usually such right has been very difficult to obtain not only in England, where this very inability has resulted in the proposed legislation, but also in the United States, excepting in cases of railroads and other common carriers. A bill before Parliament to amend acts relating to electric lighting provides that the Board of Trade may by provisional order authorize any local authority, company or person to acquire compulsorily for the purpose of a generating station any land specified in the order, whether situated within or without the area of supply, and, in the case of a local authority, whether situated within or without his district.

Such legislation goes to show how much of a public necessity electric power has become, for in the acquiring of land it puts the electric power company in a position even more favorable than that of the railroad in the acquiring of property. To be sure, it places the whole matter within the jurisdiction of the Board of Trade, which in its relation to the electric company may be likened to such an American body as the Massachusetts Gas and Electric Light Commission. In other words, Massachusetts might give to its electric light commission a similar power to that proposed in this British act, and doubtless such power would be keenly appreciated at times by the corporations which are sometimes "held up" by owners of land and made to pay exorbitant prices. In most American States the municipalities have the right to take land for their own public purposes, so that the British act as it applies to local authorities would probably not be necessary in this country. But the conferring of such power as the compulsory acquisition of land for the purpose of private individuals, even though the power plant were to confer a great deal of good, would probably be regarded with very little favor by the mass of citizens. The American public would say, Let the company locate where no objection is raised or where the price demanded is reasonable.

In this British act its projectors go even further, by providing for immunity from actions for nuisance, which are frequently brought by people living in the neighborhood of generating stations because of noise, vibrations, smoke, &c. Of course where land is taken by force, so to speak, the owner is entitled to the money value of the land, which will be determined by a jury if necessary. But the damage often goes much beyond the actual value of the real estate itself, as, for instance, where property is taken in the midst of a residential section of the better class. It is fair to presume that if an attempt should

be made to apply the law of eminent domain in the United States after the British fashion there would be sharp and vigorous protest before every State Legislature.

In these days of ultra-radical trade unionism it is refreshing to hear such words as these from a labor leader, head of a great labor organization, the Brotherhood of Locomotive Engineers: "On almost every road in the country we work side by side with men who do not belong to our order. No man is forced to join us. We try to show him how he would be benefited by belonging to us and where his interests are, but we never say to him 'Join us or you cannot earn an honest living by working here.' I do not believe any man ever made a good member in any organization who was forced to join it against his will, for the chances are that when opportunity offers he will prove a traitor and betray you." These words were addressed by Grand Chief Stone to a convention of labor representatives at Fort Worth, Texas. He urged that the closed shop means an interference with the personal liberty guaranteed by the Constitution of the United States. Such ideas from a labor leader are so unusual that they excite wonder. Yet the real wonder is that there should be anything extraordinary in a statement that is so apparently true to all fair minded men. It goes to show that labor is not generally led by those who should be its real leaders, the men of well poised minds, the best type of men in the organizations, but by men whose selfish personal ambitions distort their vision to see things only from the one standpoint of trade unionism at the expense of justice and the general good.

National Metal Trades Association Notes.

CINCINNATI, OHIO, August 8, 1904.—The Grand Lodge of the International Association of Machinists has made an imperative call on all members for an assessment of \$1. The money to be derived from this source will be spent to carry on the strikes now in progress in Chicago against the members of the National Metal Trades Association and the Chicago Metal Trades Association, and also to carry on the strike against the Atchison, Topeka & Santa Fe Railway Company.

From time to time during the past year the subject of a labor bureau has been up for discussion by the New York Metal Trades Association, but up to the present time nothing has been accomplished along these lines. The matter will again be brought before the members on Thursday of this week. Such bureaus are now in successful operation in Boston, Worcester, Springfield, Hartford, New London, Bridgeport, Trenton, Philadelphia and also in many of the larger manufacturing centers of the West. It is the unanimous opinion of all members of local metal trades associations where such bureaus are in operation that it is the most valuable feature of the organization; in fact, they are considered almost indispensable.

During the month of July, at Pittsburgh, the number of skilled laborers discharged exceeded those employed by 60.9 per cent., while in June the number of men discharged was greater than those employed by 55.4 per cent. The totals of the year from January 1 show that 23.9 per cent. more skilled laborers have been laid off than employed by members of the association, every month showing a loss with the exception of January and May.

The news from Chicago is quite encouraging, and matters are quieting down to almost normal. Although picketing is still being continued about the plants of several of the association members, yet, by reason of effective injunctions and vigorous prosecutions of violators of the law, this picketing is of such character as not to interfere in the slightest degree with the operation of the shops. Thus practically ends a strike of less than 60 days' duration, which a few years ago would have been

won by the union and would have placed the manufacturers of Chicago at a very decided disadvantage.

OBITUARY.

NOTES.

WALLACE W. HERRICK, general manager of the benefit and pension department of the American Steel & Wire Company, died August 1, in Cleveland, Ohio, after a prolonged illness. He was 53 years of age and was born in California, a few miles from Sutler's Mills, where the first discovery of gold was made in that State. When quite a young man he entered the Government service as a post office inspector, with headquarters at Cincinnati, subsequently becoming a claim agent for different railroad companies, then filling a position of the same character on the Consolidated Street Railway, in 1899 making his first connection with the American Steel & Wire Company. He was practically the organizer of the benefit and pension department. For years he had made a study of this class of work, in which he was recognized as one of the most capable men in the country. His advice was constantly sought by other corporations throughout the country. In addition to managing the relief department he was superintendent of the claim department. He is survived by a widow and two daughters.

VERDINE T. PALMER, president of the Palmers & De Mooy Foundry Company, Cleveland, Ohio, died August 4, after suffering several years from tuberculosis. He had been president of the company since its organization. His brother, George H. Palmer, was secretary and treasurer of the same company until his death several months ago. Mr. Palmer was born in Warrensville, Ohio, January 1, 1843. He entered the lumber business in Cleveland and later the coal trade. After this he started one of Cleveland's first oil refineries, the Dean Refinery at the foot of Seneca street. In a few years this was sold out to the Standard Oil Company. He then went to Pennsylvania and was interested in oil drilling and producing. He afterward returned to Cleveland, and in 1881 the present foundry company was organized. Mr. Palmer was also interested in the Great Lakes Towing Company, in the Minch Transportation Company and in other business enterprises. He is survived by a son, Louis V. Palmer.

CHARLES A. FISK, purchasing agent, cashier and a director of the Wason Mfg. Company, Springfield, Mass., died July 31, aged 50 years. He was a native of Hinsdale, N. H., and was educated at the Massachusetts State Agricultural College at Amherst. He entered the employ of the Wason Company as office boy in 1873 and worked up to responsible positions. He was president of the B. L. Bragg Company, Springfield, and a director of the Fisk Mfg. Company and the Fisk Paper Company, Hinsdale, N. H.

ISAAC W. BARNUM, inventor of the hemming attachment for sewing machines, died July 30, at Brooklyn, N. Y., aged 80 years. At one time he had a very large income, but lost his fortune in unfortunate speculation in Western lands.

WILLIAM A. BELL, formerly a well known iron manufacturer in Ohio, died July 24 in Philadelphia, Pa., aged 79 years. In conjunction with George Crawford, Mr. Bell operated the Clinton Furnace in Scotio County, Ohio, for many years.

JOHN HODSOLL, one of the leading importers of Buenos Aires, who was well known to American manufacturers, died on July 19 at his home in that city, aged 75 years. Mr. Hodsoll was born in England, but spent many years in New York City, going in 1883 to Buenos Aires, where he built up a large business in importing American goods. He was very highly esteemed in business circles and was familiarly known as "Honest John."

JOHN F. STARR, founder of the Starr Iron Works, Camden, N. J., died August 9, at his summer home in Atlantic City, aged 86 years. Mr. Starr served in the Thirty-eighth and Thirty-ninth Congresses. He was president of the First National Bank of Camden.

Pig Iron Production Heavily Reduced.

Stocks Slightly Increased During July.

During July production of anthracite and coke pig iron declined to 1,083,000 tons, and yet the stocks in the hands of merchant furnaces increased by about 46,000 tons. We have entered the month of August, however, with furnace plants in operation whose output is at the rate of 1,050,000 tons per month. Therefore the time has at last arrived when production and consumption appear to be very close to one another.

The capacity of the active furnaces was as follows on August 1:

Coke and Anthracite Furnaces in Blast.					
Location of furnaces.	Number of stacks.	August 1.		July 1.	
		Number in blast.	Capacity per week.	Number in blast.	Capacity per week.
New York.....	18	7	9,213	8	11,533
New Jersey.....	8	4	4,726	4	5,166
Spiegel.....	2	1	166	1	188
Pennsylvania:					
Lehigh Valley.....	27	11	7,702	13	8,484
Spiegel.....	1	1	328	1	292
Schuylkill Valley.....	13	5	5,391	5	6,305
Low. Susquehanna.....	10	4	5,569	4	5,418
Lebanon Valley.....	11	3	2,417	3	2,225
Spiegel.....	1	1	597	1	578
Pittsburgh district.....	38	23	64,600	23	59,625
Spiegel.....	3	3	3,246	4	3,237
Shenango Valley.....	10	8	13,290	10	17,675
West. Penn.....	18	10	15,316	12	16,627
Spiegel.....	1	1	660	1	1,184
Maryland.....	5	3	5,536	3	4,647
Wheeling district.....	12	6	6,008	6	9,771
Ohio:					
Mahoning Valley.....	15	9	20,184	9	19,282
Central and North- ern Ohio and Michigan.....	17	6	12,497	9	19,051
Hocking Valley.....	2	1	210	1	210
Hanging Rock.....	12	4	3,040	6	4,649
Illinois.....	20	12	28,982	13	31,178
Spiegel.....	2	1	1,041	0	0
Minnesota.....	1	0	0	0	0
Wisconsin.....	5	2	2,264	2	2,154
Missouri.....	1	1	720	1	768
Colorado.....	5	3	4,500	2	3,018
The South:					
Virginia.....	23	6	4,285	9	5,822
Kentucky.....	8	2	534	2	616
Alabama.....	42	16	17,246	24	25,579
Tennessee.....	16	9	5,024	10	6,217
Georgia.....	1	1	800	1	802
North Carolina.....	1	0	0	0	0
Totals.....	378	164	246,092	188	272,301

For a series of months the active anthracite and coke furnace capacity fluctuated as follows:

Coke capacity per week.		Coke capacity per week.	
August 1, 1904.....	246,092	March 1.....	347,424
July 1.....	272,301	February 1.....	335,339
June 1.....	336,197	January 1, 1903.....	346,073
May 1.....	368,244	December 1, 1902.....	336,617
April 1.....	337,257	November 1.....	330,110
March 1.....	308,751	October 1.....	337,837
February 1.....	273,692	September 1.....	328,243
January 1, 1904.....	185,636	August 1.....	328,745
December 1, 1903.....	244,156	July 1.....	303,793
November 1.....	273,715	June 1.....	337,492
October 1.....	353,142	May 1.....	337,627
September 1.....	360,197	April 1.....	331,140
August 1.....	353,081	March 1.....	316,039
July 1.....	384,825	February 1.....	325,440
June 1.....	388,178	January 1, 1902.....	291,992
May 1.....	373,496	December 1, 1901.....	317,354
April 1.....	368,215		

There were blown out during July Buffalo A furnace, one Hokendauqua and Keystone of the Thomas Iron Company, Soho of Jones & Laughlins, Pittsburgh; Hall of the Republic Company, in the Shenango Valley; Nittany and Rebecca, in Western Pennsylvania; two Mingo, in the Wheeling district; Newburgh of the American Steel & Wire Company, at Cleveland; Dover and Toledo, in Ohio; Etna and Star, in the Hanging Rock region, and Anna, in the Mahoning Valley. There are out Princess, Pulaski and Crozer, in Virginia. In Alabama there were banked on August 1 three furnaces of the Alabama Coal & Iron Company, four at Bessemer and one at Ox-

moor of the Tennessee Company and two of the Woodward Iron Company. In Tennessee one of the South Pittsburgh furnaces has gone out.

There were started during July one of the furnaces of the Colorado Fuel & Iron Company, one Monongahela, in Pittsburgh, and one Ohio, in the Mahoning Valley.

The production of anthracite and coke pig iron in recent months has been as follows:

Monthly Pig Iron Production.					
	March. (31 days)	April. (30 days)	May. (31 days)	June. (30 days)	July. (31 days)
New York....	41,788	41,507	41,996	39,142	44,095
New Jersey....	21,326	21,298	20,182	19,186	21,665
Lehigh Valley..	38,348	41,184	44,022	37,747	36,062
Schuylkill Val.	24,047	30,293	43,159	27,022	23,875
Lower Susquehanna and Lebanon Val.	29,364	37,325	40,498	35,519	38,008
Pittsburgh dis.	398,464	422,572	407,482	339,124	302,266
Shenango Val.	91,872	104,151	95,152	73,666	61,708
West. Penn....	94,790	96,134	79,636	73,612	72,465
Md., Va. and Kentucky....	58,608	55,145	58,182	48,124	50,613
Wheeling dis..	78,646	86,658	89,085	71,734	29,249
Mahoning Val.	102,356	113,761	121,501	100,150	77,646
Cent. and No..	99,253	114,100	105,412	80,581	42,981
Hocking Valley and Hanging Rock.....	30,353	23,676	23,334	20,824	14,970
Ill., Mich., Minn., Wis., Mo. and Col.	176,678	204,108	197,827	171,130	165,388
Alabama.....	128,947	132,245	135,982	124,881	94,073
Tennessee, No. Carolina and Georgia....	32,165	31,110	30,080	30,088	27,761
Totals.....	1,447,065	1,555,267	1,533,350	1,292,030	1,082,784

We estimate the production of the anthracite and coke furnaces monthly as follows:

	1903. Gross tons.	1904. Gross tons.
January (31 days).....	1,472,788	921,231
February (29 days).....	1,390,615	1,205,449
March (31 days).....	1,590,470	1,447,065
April (30 days).....	1,608,431	1,557,267
May (31 days).....	1,713,614	1,533,350
June (30 days).....	1,673,228	1,292,030
July (31 days).....	1,546,184	1,082,784
August (31 days).....	1,571,126	.....
September (30 days).....	1,553,717	.....
October (31 days).....	1,425,658	.....
November (30 days).....	1,039,622	.....
December (31 days).....	846,605	.....

These figures do not include the production of the charcoal furnaces, which have during the first six months of 1904 averaged about 35,500 tons per month.

Production of Steel Companies.—Returns from all the plants of the United States Steel Corporation, the Cambria, Pennsylvania, Maryland, Lackawanna, Wheeling, Ashland, Republic, Jones & Laughlin, La Belle, Bethlehem, Calumet and Colorado companies show the following totals of product month by month. We present also monthly figures of the production of spiegeleisen and ferromanganese:

Pig.—Total production.		Spiegeleisen and ferromanganese.	
	1903.	1904.	
January.....	502,994	.....	6,673
February.....	756,230	.....	12,961
March.....	913,412	.....	23,128
April.....	966,850	974,006	11,755
May.....	1,037,325	927,534	17,600
June.....	1,021,839	788,822	16,309
July.....	987,855	694,892	14,933
August.....	993,564	.....	15,862
September.....	956,363	.....	8,406
October.....	829,215	.....	10,374
November.....	553,067	.....	17,695
December.....	406,730	.....	15,394

Stocks.

Believing that a classification of the merchant stocks by general geographical divisions would aid in a correct appreciation of the situation, we have arranged them in three groups: The Eastern, which includes New York, New Jersey, and the Schuylkill, Lehigh, Lower Susquehanna and Lebanon valleys; the Central Western and Northwestern, which includes Western Pennsylvania, the Shenango and Mahoning valleys, the Hanging Rock region, Central and Northern Ohio, and Michigan, Illinois, Wisconsin, Minnesota and Missouri; and the Southern, which includes Virginia, Kentucky, North Carolina,

Georgia, Alabama and Tennessee. The stocks, of course, do not include the holdings of the steel companies:

<i>Merchant Furnace Stocks.</i>					
	April 1.	May 1.	June 1.	July 1	August 1.
East	71,230	74,637	90,492	96,002	100,912
Central and North-west	161,971	145,394	212,312	281,617	312,873
South	224,712	224,028	243,088	243,225	253,381
Totals.....	457,913	444,059	545,892	620,844	667,166

It will be observed that nearly the entire accumulations during the month have taken place in the Central Western and Northwestern districts. The South, however, shows some increase also.

Labor Notes.

The L. W. Pond Machine & Foundry Company, Worcester, Mass., has granted the demands of the striking molders and core makers for a return to their former minimum wage of \$3 a day. The conditions in the other Worcester foundries affected by the strike continue to improve from the standpoint of the employers. The Reed Foundry Company has 50 men at work, and the J. A. Colvin Foundry has about all the men needed at the present time. The Kabley Foundry will start up as soon as the new foundry is far enough along to permit of a resumption of business. The Wheeler Foundry is still closed.

A movement is on foot in Boston to establish an employers' association on a very large scale. The idea is to include not only the city of Boston and its neighboring towns and cities, but Massachusetts as a whole, and there will be no territorial restriction to prevent any New England employer of labor outside of Massachusetts from entering into membership. A beginning has been made with 650 Boston employers, representing 48 industries and employing thousands of men, and the first meeting has been held. Another will be called in the near future, at which an Executive Committee appointed at the first meeting will make its report, and a formal organization will doubtless be completed. In a statement already given to the public the association sets forth, among other things, that it is for the common good of employer and employee that "labor questions shall be dealt with in a rational and temperate manner, and to that end we shall obtain information as to conditions and methods of adjusting labor matters elsewhere, so that the labor problems of our members can be settled with the least possible friction and loss. We aim to educate the union workman, so that he may comprehend the requirements necessary to industrial success, and desire to teach him some of the simplest principles of political economy, especially the truth that the prosperity of the line of industry which he follows is his prosperity, and that its failure is his failure."

An attempt was made to dynamite the plant of the West Side Foundry Company, Colonie, near Watervliet, N. Y., August 9. No one was injured. The company has been having trouble with its molders, who went on strike April 19, and it was necessary to procure two injunctions restraining former employees from picketing the premises and interfering with the men who have taken the places of the strikers.

In the suit brought by the trustee for the creditors of the New York Car Wheel Works, Buffalo, against P. H. Griffin, the former president of the bankrupt company, the United States District Court has rendered a decision sustaining Mr. Griffin. In the event of its being successful further suits would have been brought against him by the trustee, who claims a total indebtedness of about \$600,000 due to the car wheel works. It is believed the trustee will appeal.

The New York Produce Exchange will institute trading in pig iron warrants on September 1. It is proposed to govern the trading under rules somewhat different

from those in force on the Pittsburgh Stock Exchange, where pig iron warrants have been traded in for some time past. Under the Produce Exchange rules only one form of warrant, calling for the delivery of a single standard grade of pig iron, will be employed, instead of a number of warrants calling for different grades.

PERSONAL.

W. H. Whiteside, general manager of sales of the Allis-Chalmers Company, has been appointed general manager of sales of the Bullock Electric Mfg. Company, so that he will have entire charge of the sales department of both the Allis-Chalmers and Bullock organizations.

F. N. Hoffstot, president of the Pressed Steel Car Company, has returned from a trip to Europe.

C. L. Hastings, formerly Pittsburgh sales agent of the Bethlehem Steel Company, has accepted a position with the Pittsburgh Gauge & Supply Company, in charge of sales for their steam specialties. He is succeeded by E. S. Knisely of Bethlehem.

James B. Forgan, president of the First National Bank, Chicago, has been elected a member of the Board of Directors of the American Radiator Company, to succeed the late Wm. T. Baker.

H. W. Taylor of the N. & G. Taylor Company, Philadelphia, manufacturers of tin plates, sailed from New York, August 9, on the "Kaiser Wilhelm II," for an extended trip abroad.

New Publication.

American Trade Index, 1904.—Published by the National Association of Manufacturers of the United States of America, 170 Broadway, New York. Cloth, 702 pages. Price to purchasers in the United States, \$5 per copy.

This is the sixth annual edition of a descriptive and classified directory of the National Association of Manufacturers, arranged for the convenience of foreign buyers. It contains the names of nearly 3000 American manufacturers, whose products cover almost the entire field of productive industry. The book is distributed gratuitously to prominent importers, wholesale dealers, manufacturers, &c., in countries outside of the United States who are interested in purchasing or handling American goods. The contents are printed in English, German, French and Spanish. The arrangement followed first gives an alphabetical list of the members, with a statement of all the products manufactured by each, and, second, an alphabetical list of the articles produced, with the names of the various manufacturers producing them under these headings. The list of manufacturers is an unusually select one, as the members of the association are largely the leading business concerns in their lines.

The Morse Dry Dock & Repair Company, Brooklyn, has been incorporated under the New York laws with a capital stock of \$600,000 to take over the plant and business of the Morse Iron Works & Dry Docks Company. The directors are E. P. Morse, Daniel J. Leary, George Leary, John P. Caddigan and William C. Reid, all of New York. The new company will take possession immediately and will begin business by putting the dry dock into use. Operations will be gradually extended until the entire plant at South Brooklyn is running.

Arthur Visick, formerly of the Napier Company, the most prominent manufacturer of motor cars in England, has been appointed St. Louis representative for the Packard Motor Car Company, Detroit. Mr. Visick has had a wide experience abroad in connection with the Woosley and Napier factories. This experience will be of particular value to him in his present position. Mr. Visick will be pleased to explain the many excellent qualities of the Packard Voiture Legere at the Packard exhibit in the Transportation Building at the exposition.

Trade Publications.

Electrical Apparatus.—Bulletin 1055 from the Fort Wayne Electric Works, Fort Wayne, Ind., contains a description of the form C arc lamps with concentric diffusers for interior lighting. These are particularly designed for the illumination of textile mills or mercantile establishments handling textiles or other large areas requiring rather intense light. The diffuser consists of a porcelain shade below and around the inner globe and a porcelain lined reflector above of a form designed to secure the maximum efficiency and distribution of the light rays. A pamphlet from the same company deals with the Wood fan motors. The body of the latter is made up of attractive half-tone engravings of the motor by itself and installed in various ways. Practically all of the reading matter is contained on small inserted leaves alternated with the regular pages.

Feed Water Heaters.—The Warren Webster Company, Camden, N. J., has issued a little booklet of information for owners and users of steam plants. Its purpose is to show the saving effected by the installation of a Webster Star Vacuum feed water heater and purifier. Considerable space is given to an explanation of the qualities and features which should characterize the right kind of a feed water heater.

Portable Electric Tools.—A little catalogue from the W. C. Johnson & Sons Machinery Company, St. Louis, Mo., is descriptive of the Willey electrically driven grinders and breast drills as manufactured by James Clark, Jr., & Co., Louisville, Ky., for whom the aforementioned company is agent. Illustrations explained by the text show a motor driven center grinder, motor driven breast drill and a portable bench grinder. In all cases the motors are of the inclosed type, the electrical connections being on the inside and protected from injury.

Valves.—From the Schutte & Koerting Company, Twelfth and Thompson streets, Philadelphia, successors to L. Schutte & Co., a small but comprehensive catalogue on valves has been received. The proper construction of cone-seated globe valves is exhaustively explained, with drawings. Thereafter follow cuts of the various patterns of valves made by this company, each attended with a table of sizes and prices. These include hard bronze valves, globe and angle check valves and lever valves, iron body valves, a noiseless stop check valve, balanced stop and throttle valves, free exhaust valves, &c.

Steam Turbines and Electrical Machinery.—The General Electric Company, Schenectady, N. Y., has recently issued an 8 x 10 1/4 inch 28-page catalogue on the Curtis steam turbine, also a catalogue on fan motors, one on lightning arresters and bulletins 4374, 4375 and 4378 and flyers 2128-32, and price-lists 5123-26. The turbine catalogue is one of special interest, for although the public has become well acquainted with the machine through the technical press, there has been the need of a piece of trade literature on the subject from the company itself. The frontispiece is a large engraving of a turbine of 5000-kw. size direct connected to a three-phase alternating current generator. The theory and construction of the turbine are treated in an exhaustive manner, with profuse illustrations, which deserve mention for the excellence with which they bring out the desired points. In concluding, line drawings are given of a turbine installation for the Edison Electric Illuminating Company, Boston, Mass., and several plans showing the comparative floor space occupied by turbine and engine driven electric units of same capacity. The fan motor catalogue shows a line of fans for alternating current and direct current, in 12 and 16 inch sizes, with swivel and trunnion frames, convertible desk or wall patterns, and ceiling fans. The illustrations are excellent and the text pleasingly chosen to convey its purpose without tiring the reader. The lightning arrester catalogue contains 75 pages and covers its subject very completely. The beauty of its illustrations alone make it worth possessing. Bulletin 4374 deals with cable testing current transformers, 4375 with sewing machine motors, and 4378 with pocket instruments for direct or alternating current. Flyer 2128 shows a flush wall receptacle. 2129 switchboard receptacles, 2130 quick break punched clip switches for 500-volt service, 2131 fuse wire, and 2132 pendant switches.

Pneumatic Appliances.—An 80-page 6 x 9 inch catalogue from the Curtis & Co. Mfg. Company, St. Louis, Mo., is on the subject of air compressors, air hoists and pneumatic appliances. A very complete description is given of the Curtis automatic compressor, with views of the parts in detail and assembled. This is said to be in a class by itself, since it is the only vertical single acting type on the market, and claims a very high economy and efficiency. It is furnished in both single and double stage patterns for either belt or motor driving. A page is given to the discussion of the economy of various types of air compressors. The next division of the book is devoted to air hoists, the operation and construction of which are treated in an equally comprehensive manner. Intimately associated with the hoists is the part which deals with traveling cranes and trolleys. The former are of the double and single I beam pattern for heavy or light work. Hose and accessories, electric hoists, chain blocks and track for trolley systems, jib cranes, pneumatic elevators and compressed air reservoirs are shown in the balance of the book.

Railroad and Contractors' Tools.—The Standard Truck & Forging Company, St. Louis, Mo., has just issued its catalogue No. 1, illustrating its line of railroad and contractors' tools and specialties and other forgings. This catalogue is standard size, 32 pages, with more than 60 illustrations. The line illustrated includes the Jim Crow rail bender, straight and S track

wrenches, track layer wrench, rail fork, picks of various styles, punches, chisels, sledges, hammers, tongs, pinch and digging bars, picket pins, tongs of various styles, wedges and coal miners' tools. The company's products also include electric railway trucks, mine cars and similar equipment. Its shop at St. Louis, which was only recently equipped, is described as the most modern forging and machine shop west of the Mississippi River. The officers and department heads are men of long experience in forging work.

Box Car Loader.—The Ottumwa Box Car Loader Company, Ottumwa, Iowa, has issued a catalogue devoted to stationary dock and portable box car loaders, for loading coal, ore, lime, sand, &c. The catalogue has many illustrations, showing the loader in operation under various conditions. Plan views of both portable and dock loader give excellent conception of how the device is operated. Twelve pages are given over to drawings of numbered parts of the device, which permits of a very complete comprehension of the mechanism of the loader.

NOTES.

The Rand Drill Company, 128 Broadway, New York City, is distributing a leaflet entitled "South African Rock Drill Tests," which is a *fac-simile* of a page from the Johannesburg (South Africa) *Star*. It contains an account of the now famous drill tests carried on by the Mechanical Engineers' Association of the Witwatersrand. The circular is folded and addressed on the back and is being mailed to mine owners and all interested in mining.

The June monthly stock list from the Bourne-Fuller Company, Cleveland, Ohio, lists an unusually extensive and complete stock of iron, steel, pig iron and coke. These are classified and tabulated in the customary manner.

The June issue of *Ryerson's Monthly Journal and Stock List*, issued by Joseph T. Ryerson & Son, Chicago, contains among its leading articles "Notes on Chimneys," "New Boiler Inspection Requirements in Chicago," "The Cleveland Solid Frame Punch and Shear," "The Care of Pneumatic Tools," and "The Armstrong Rivet Heating Furnace."

The Lewis Foundry & Machine Company, Pittsburgh, have issued a little pamphlet calling the attention of users of chilled rolls to the company's patent even depth chilling process. An illustration showing interior of mold prepared for the process, containing the roll after shrinking, is an interesting exposition of the method. A complete list both of card rate and contract prices of Lewis rolls is included.

M. Lanz & Sons, Twenty-ninth and Carson streets, Pittsburgh, have a new catalogue entitled "Timber Hangers and Post Caps for 60 Sizes of Timber." There are many illustrations, most of them showing sections. Tables give the safe loads for various sizes and kinds of timber, and there is a good deal of other interesting information.

P. Hollingsworth Morris, 1501 South Front street, Philadelphia, has sent out a handsome catalogue showing various products of his works, including the largest portable pipe cutting machine in the world, which was described in *The Iron Age* of March 17, 1904; Weston centrifugals with mixer, a preparing machine for sand lime bricks; a 3,500,000-gallon d'Auria pumping engine and other machinery built for various concerns to accomplish various work.

The Holland Company, 77-83 Jackson Boulevard, Chicago, has issued circular No. 14, devoted to stationary and special engines for compressed air or steam. A number of illustrations show the Dake square piston engine for direct connection with electric generators, blowers, centrifugal pumps, &c.; the Dake reversing air or steam motor and the Dake stationary engine.

The Sprague Electric Company, 527-531 West Thirty-fourth street, New York, has issued bulletin No. 219, devoted to round type motors and the F. M. type motors. There are a number of good illustrations showing details of the motors and various applications in commercial use.

The Ephrata Foundry & Machine Works, Ephrata, Pa., has sent out an illustrated leaflet devoted to the improved Keystone turbine water wheel, a complete description of which is included, together with tables showing the power, quantity of water used and number of revolutions per minute of wheels under various heads, and dimensions of water wheels. Space is also given to an illustrated description of the Keystone corn and cob crusher manufactured by the company.

The National Acme Mfg. Company, Cleveland, Ohio, has issued a catalogue and price-lists of its various lines of screws, studs, bolts and nuts, together with a number of illustrations showing various special products manufactured by the company.

The Nernst Lamp Company, Pittsburgh, has published a booklet devoted to the value and utility of the Nernst lamp to the central station as well as to large establishments such as department stores, factories and art galleries, and for various special purposes such as fruit packing where fruit is sorted according to color.

The Northern Electrical Mfg. Company, Madison, Wis., has sent out a folder, known as leaflet No. 130, in which is attractively displayed the Northern spherical motor as adapted for use with wood working machinery. This motor is shown belted to a buzz saw, driving a swing cut off saw and a Defiance wood working lathe.

The Eaton & Prince Company, 70-76 Michigan street, Chicago, has issued what is termed "Our Reference Book," devoted to letters of indorsement of the company's electric elevators, and a list of establishments where this elevator is in use.

MANUFACTURING.

Iron and Steel.

The Anna Furnace of the Struthers Furnace Company, Cleveland, Ohio, was shut down July 13.

Pickands, Mather & Co., Cleveland, Ohio, blew out their Toledo furnace July 2.

Pulaski Furnace of the Pulaski Iron Company was blown out July 19 for relining.

The Nittany Furnace, Bellefonte, Pa., was blown out July 2.

The Penn Iron & Coal Company, Canal Dover, Ohio, blew out its Dover Furnace July 31.

The Ohio Iron & Steel Company, Lowellville, Ohio, expects to blow out the Mary Furnace in a few days.

A movement is on foot to establish what is to be known as the Peoria Tool & Steel Company at Peoria, Ill., to manufacture steel and convert it into tools and other products. The project was proposed in the first place by representatives of the National Steel & Automatic Tool Company in the persons of F. H. Farnum, J. R. Long and F. A. Rogers. John Bergmann, formerly superintendent of Brown & Co.'s plant at Pittsburgh, is actively interested and is spoken of as the future superintendent of the Peoria plant. Theodore Miller of the Peoria Chamber of Commerce can give information.

Preparations are being made for the operation of the York Rolling Mills, York, Pa., which have been idle since spring.

Fulton Furnace, in the Hanging Rock region, was blown in on August 8.

The statement that the Frontier Coal & Steel Company, Denver, Col., would break ground for its plant in September is premature. The company will depend upon the new Denver, Northwestern & Pacific Railroad, and work on the line has been retarded by some extremely heavy grading.

The Clifton Furnace of the Alabama Coal & Iron Company, Ironton, Ala., has been banked to clean flues, and the Gadsden-Alabama Furnace of the same company, Gadsden, Ala., has been banked to repair blower engines and to clean flues.

The plant of the Emlyn Iron Works, at East Chicago, Ind., bought by John R. Walsh, president of the Chicago National Bank, has been sold or transferred by him to a number of capitalists, among whom S. Morris & Co. are prominent. It is the intention of the purchasers, who are largely former stockholders of the company, to put the plant in operation as soon as possible.

The blast furnace of the Salem Iron Company, Leetonia, Ohio, has been blown out for relining and repairs. It is intended to overhaul the furnace thoroughly and equip it with a skip hoist; also to erect a new boiler and stand pipe, put in a new pump, dynamo and engine and make numerous other improvements and necessary repairs.

A new corporation will be organized to take over the plant and business of the Ellis & Lessig Steel & Iron Company, Pottstown, Pa. George B. Lessig, president of the old company, will be the head of the new corporation, and with him will be associated J. B. Lessig, J. B. Lessig, Jr., and Louis C. Lessig. The property consists of a puddle mill, 22 furnaces, a bar mill and nail factory.

The third open hearth furnace of the new plant of the Harrisburg Pipe & Pipe Bending Company, Harrisburg, Pa., will be operated for the first time this week.

The works of the National Tube Company, Middletown, Pa., resumed operations Monday, August 8, after a shutdown of three weeks. Orders are already in sight to keep the plant operating for several months.

The Illinois Steel Company is making rapid progress in the work of remodeling its 132-inch plate mill at South Chicago. The work consists largely of a rearrangement of the mill, with new hot beds, shears and shipping cranes. The remodeling is being undertaken for the purpose of increasing the efficiency of the mill, with the view not only to increasing the tonnage of output but also for the purpose of finishing plates of the highest possible quality, with greater accuracy than has been common in the trade heretofore. The newspaper statements to the effect that the company has appropriated \$750,000 for this improvement and that a 142-inch plate mill would be installed are characterized by officials of the company as erroneous.

The plant of the American Rolling Mill Company, Middletown, Pa., was not seriously damaged in the recent fire, the only loss being a house built about the power house. New fittings and belting are about the only new materials required in making good the loss.

General Machinery.

William G. Le Count, South Norwalk, Conn., manufacturer of machine tools, has recently added a line of extra heavy two-screw straight tailed dogs and extra heavy two-screw bent tailed dogs, both made in $\frac{1}{4}$ -inch graduations from 2 inches to 7 inches, and an 8-inch size of both styles. The manufacturer states that the screws used in all of his dogs are made on the premises, of tool steel, United States standard, and that the points are properly hardened. The new line has a very heavy boss, enabling heavier screws to be used if the thread should wear.

The New England Machinery Company has been incorporated at Buffalo, capital \$4000, to manufacture special wood working machinery for office furniture, &c. Directors, John Meyer, Jesse Atherton and E. Meyer, Buffalo.

The Oil & Waste Saving Machine Company, Rochester, N. Y., has been incorporated to manufacture waste saving machines. Capital, \$50,000. Incorporators: T. S. Patterson, E. H. Williams, New York City, and C. F. Holcomb, Bridgeport, Conn.

The Peerless Motor Company, Incorporated, Lansing, Mich., is planning an extension to its factory, 60 x 180 feet. The company recently increased its capital stock to \$50,000.

George S. Rodgers, Springfield, Ohio, has fitted up a machine shop for the production of models and special machinery. He is getting out an order for special automobile machinery for a company in London, England, and recently built a number of special candy wrapping machines for Richard Igou of Springfield.

The Board of Trade, Canton, Ohio, has raised the \$10,500 necessary to retain the location of the shops of the Wheeling & Lake Erie Railway which were destroyed by fire some months ago. The city will purchase the land and the company will erect the shops, the first building of which will be 110 x 190 feet, with wings 70 x 238 feet and 45 x 70 feet. The cost of the buildings and machinery will be between \$60,000 and \$70,000, while the track improvements to be made in the city will cost \$30,000.

The Mesta Machine Company, Pittsburgh, will erect a building in connection with their present works at Homestead, Pa., to be used as a power plant. It will be of steel frame construction, fire proof throughout, 76 x 112 feet, and will be equipped with eight boilers of 2000 horse-power, two 800 horse-power Corliss engines, direct connected to generators, and three gas engines of 350 horse-power each, direct connected to generators; also two automatic air compressors. The plant is to be of sufficient size to furnish power for the present works and also for buildings to be erected on property recently purchased from the American Bridge Company. The engines will be built at the company's works on its own designs.

The Royersford Foundry & Machine Company, Royersford, Pa., notes a marked increase in the demand for its various tools since the middle of July. During the past two weeks orders have been booked for ten punches and shears of different sizes. Three machines were recently shipped to L. F. Seyfert's Sons, Philadelphia, Pa., and an order has been received for two No. 1 double machines with special attachments from the Anthracite Separator Company, Hazleton, Pa. Both the foundry and machine departments are busy and the conditions for the balance of the year are considered very favorable.

The machine shops of the Winder Foundry & Machine Company, Winder, Ga., were not destroyed by a windstorm as reported. The company's warehouse was blown down, but no other damage was sustained.

Power Plant Equipment.

The Wellman-Seaver-Morgan Company, Cleveland, Ohio, has closed a contract with the Leiter Coal Company for the construction of a second hoisting plant at its mines at Zelgler, Ill. This plant will consist of a steel head frame, equipped with double cylinder hoisting engine and all the necessary guides, counterweights, &c. The contract was awarded to the company in the face of severe competition. This is the second contract which the Wellman-Seaver-Morgan Company has taken for the Leiter Coal Company, the first consisting of a complete hoisting and coal handling plant, which is now in successful operation.

The Belton Power Company, Belton, S. C., has been organized to develop water power from the Saluda River and transmit it to established cotton factories and other mills to be built.

The Cutaway Harrow Company, Higganum, Conn., is installing a 90 horse-power boiler and 80 horse-power engine, furnished by the Erie Engine Works.

M. Schroyer's Sons & Co., manufacturers and jobbers in tin, stamped and japanned tin ware, 49 Blue Island avenue, Chicago, who are building a new factory and warehouse at Eighteenth and Sangamon streets, will be in the market for electric motors, power presses and elevators, as well as the general material used in the construction of the building.

Dodge Brothers, manufacturers of special machinery, tools, gears and automobile parts, Detroit, Mich., have contracted for the entire equipment for their new power plant. The Skinner Engine Company, Erie, Pa., will furnish a $9\frac{1}{2}$ x 16 x 15 inch stroke engine, direct connected to a generator supplied by the Triumph Electric Company, Cincinnati, Ohio; boilers will be furnished by the Dearing Water Tube Boiler Company, Detroit; heaters by the Hoppes Mfg. Company, and water separators by the Austin Separator Company, Detroit.

The Ohio Motor Company, Sandusky, Ohio, manufacturer of gas engines, is building an addition 60 x 190 feet which will be used for an erecting and store room. A 5-ton electric crane to cover the shop has been ordered and considerable new machinery will be installed.

The Foon Gas Engine Company, Springfield, Ohio, is erecting a two-story brick and steel addition 52 x 207 feet. It will be

used for painting, finishing and shipping departments. The company reports that the gas engine business has not suffered any decline and that the outlook is most favorable.

The Gardner Convertible Steam & Gas Engine Company, Washington, Pa., has selected a site for its new plant at Washington and is now erecting a machine shop 52 x 190 feet. It is planned to erect a foundry later. The machine tools for the shop now under construction have been purchased, and power will be provided by one of the company's 25 horse-power convertible gas and steam engines.

Foundries.

The National Electric Company, successor to the Christensen Engineering Company, Milwaukee, manufacturer of Christensen air brakes and electrical machinery, has completed extensions to its foundries, and is soliciting orders for open hearth, crucible steel, semisteel, iron and brass castings. The company's foundries are equipped with every facility for rapid and economical output, and as the nature of its own work demands castings of the highest grade, material furnished on orders will be of the same quality.

The Union City Foundry Company, Union City, Pa., has erected a foundry 70 x 110 feet, with an ell 50 x 90 feet. Equipment will be installed this month, it is expected. The company will do general foundry work and will make several specialties, including the Barrett patented cast iron sectional tubular boiler. The officers are: President, F. W. Burnam; vice-president, E. Collopy; treasurer, William Warden; secretary and treasurer, W. B. Barrett.

At a recent meeting of the stockholders of the Battle Creek Iron Works, Limited, Battle Creek, Mich., it was decided to reorganize the company under the statute which permits a limited company to change its organization and become a corporation. Another stockholders' meeting will soon be held, at which it is proposed to reduce the capital stock from \$600,000 to \$100,000. Provisions will also be made for a rebonding to take up the present outstanding bonds, pay off the company's debts and provide a fund with which to carry on the reorganized business.

The Wellman-Seaver-Morgan Company, Cleveland, Ohio, has just been awarded a contract to furnish the Wellman-Street cast steel truck bolsters for 800 cars to be built by the Norfolk & Western Railway Company, the whole order amounting to 550 tons of steel castings. Each bolster consists of one steel casting, having side bearing and center plates cast integral therewith, and will be made from open hearth basic steel. Of the 800 cars, 200 will be hopper coal cars of 50 tons capacity, having steel underframes with wood lining, and will be built at the company's shops at Roanoke, Va. The remaining 600 cars will be box cars, 40 tons capacity, having steel underframes, and will be built by the American Car & Foundry Company at Huntington, W. Va.

The New England Steel Casting Company has been incorporated in Massachusetts to take over the steel foundry of the Pope-Robinson Company, Hyde Park, Mass. The company will manufacture high grade crucible steel castings, making a specialty of automobile work. It is not in the market for machinery, as the foundry is fully equipped. It has been operated by the Pope-Robinson Company for a little over a year.

Boilers, Engines, &c.

The King Gas Engine Company, Iola, Kan., is about to begin the erection of a new brick factory 50 x 80 feet and 24 feet high. It will be served by the Missouri, Kansas & Texas and the Missouri Pacific railroads, giving excellent shipping facilities. Machinery equipment for the factory has already been purchased. The company will manufacture the King gas and gasoline engine and the King locomotive.

The Gemmer Engine & Mfg. Company, Marion, Ind., has just closed a contract for the manufacture of 1000 engines for automobiles.

The Timblin Engineering & Foundry Company, Creighton, Pa., which has taken over the business of the Timblin Engine & Pump Mfg. Company, will not build a new plant this season, but expects to begin building operations next spring. The company makes the Timblin patent gas and steam engines from 1 to 100 horse-power, these engines being designed to take either steam or gas.

The Frost Mfg. Company, manufacturer of engines and boilers, Galesburg, Ill., reports the booking of a satisfactory number of orders for its product. The company states that business for 1904 will exceed that of 1903, which was its largest year. Its plant is being run overtime with a large number of orders on hand, and there are prospects for continual good trade during the balance of the summer and fall.

Moffitt Bros., Sanford, N. C., are erecting a new machine shop and foundry building, 52 x 260 feet, and a warehouse 40 x 62 feet connected with the main building, together with additional shed room. The company manufactures boilers, engines and general machinery.

Bridges and Buildings.

The Minneapolis Steel & Machinery Company, Minneapolis, Minn., has the contract for a plant for the Winona Malting Company, to consist of steel working house and storage tanks. The

construction of this plant will involve the use of about 800 tons of steel. With the exception of the electrical apparatus, the Minneapolis company will build all machinery required.

Grainger & Co., Louisville, Ky., have the contract for building a steel viaduct for the Louisville & Southern Indiana Traction Company, at Louisville. The viaduct, which will take about 1700 tons of steel, will connect the Big Four bridge with the tracks of the company at Wenzel and Franklin streets.

The Fargo Bridge & Iron Company, Fargo, N. D., has secured the contract for building a street railway bridge over the Red River, connecting Fargo, N. D., and Moorhead, Minn. The contract price is \$14,500. The work will consist of one 200-foot steel draw span with a center concrete pier and 600 feet of wooden approaches to the draw span. Construction will begin shortly.

Fires.

The plant of the Ohio Valley Buggy Company, Aurora, Ind., was destroyed by fire August 1; loss \$50,000.

Girard & Godin's coffin factory, Three Rivers, Mich., was destroyed by fire July 27; loss \$40,000.

The workshop of the Missouri Bridge & Iron Works, Leavenworth, Kan., was burned July 30; loss \$35,000.

The pattern department of the Maryland Steel Company, Sparrow's Point, Md., was destroyed by fire August 7, with a loss of \$40,000. The company announces that although many patterns were destroyed no delay will be caused in filling orders either at Sparrow's Point or at Steelton, Pa.

The repair shop of the American Refrigerating Company, St. Louis, Mo., including a large amount of machinery, patterns and tools, was destroyed by fire August 9, together with 65 refrigerator cars. The total loss was \$300,000.

The Albion Iron Works, Victoria, B. C., was seriously damaged by fire August 9, in a conflagration that wiped out a considerable residential district.

Hardware.

The Paddock-Hawley Iron Company, manufacturer, importer and dealer in iron, steel, carriage and heavy hardware, &c., St. Louis, Mo., has increased its capital stock from \$350,000 to \$600,000. Of this increase \$200,000 is preferred and \$50,000 common stock.

The New Castle Forge & Bolt Company, New Castle, Pa., has resumed operations in all departments after a shutdown to take stock and make repairs. The additions to the plant are all completed and are at work.

The Warner Silver Plate Mfg. Company, Dixon, Ill., is installing a 10-ton rolling machine to roll the metal into sheets ready for shaping into various forms.

H. W. Butterff and several others of Nashville, Tenn., have acquired the Indiana Mfg. Company and the Indiana Chain Company, both of Indianapolis, Ind. The capital stock of the first named company will be increased to \$75,000, while the stock of the Indiana Chain Company will be increased to \$50,000. M. A. Horner, Baltimore, was president and chief owner of the Indiana Mfg. Company, while Earl C. Perry was secretary and treasurer. The Chain company was in reality a part of the manufacturing company, but H. W. Butterff was president and P. C. Butterff secretary.

The Schatt & Morgan Cutlery Company, Titusville, Pa., held its annual meeting on August 1, when all the old officers were re-elected. The showing for the year was very satisfactory, being the best since the company commenced business in 1896. The company has just added 35 new patterns of pocket knives to its already extensive assortment.

A new plant is to be erected this fall by the Wabash Mfg. Company, Wabash, Ind., which has succeeded to the business of the Howard Elastic Wheel Company, manufacturer of steel wheels and sleds. The new company will make a specialty of sleds and children's wagons.

Miscellaneous.

The Lyons Metal Bound Shipping Crate Company, capital \$50,000, has been incorporated at Lyons, N. Y., for the manufacture of shipping crates and wares. The incorporators and directors are A. H. Tower, Charles Fisher and F. D. Burgess, all of Lyons.

The Mosier-De Graft Contracting Company has been incorporated at Buffalo, N. Y., with a capital stock of \$150,000. Directors: Chas. Mosier, I. A. De Graft and Frank S. McGraw. It is stated that the company has been organized for the purpose of bidding on the excavating work for the enlargement of the Erie Canal.

The West End Rolling Mill Company & Chain Works, Lebanon, Pa., has received from the United States Government the annual contract for chain cables for the Philippines. This is the second contract the Lebanon firm has secured for chains for the Philippines.

Lewis Nixon has leased the plant of the Perth Amboy Shipbuilding & Engineering Company, Perth Amboy, N. J., from Willard P. Voorhees, the receiver. The report that Mr. Nixon has also leased the Crescent Ship Yards at Elizabethport, N. J., is stated at the office of the United States Shipbuilding Company to have no foundation in fact.

The Smith-Snyder Company, Sandusky, Ohio, and the Defiance Refrigerator Company, Defiance, Ohio, have been consolidated and the factory will be located in Sandusky. The old Butler factory on Water street has been purchased and will be fitted to meet the requirements of the business.

The stock and machinery of the Flickinger Wheel Works Company, Gallon, Ohio, have been sold at receiver's sale to J. W. White of Ft. Wayne, Ind., and the sale has been confirmed by the courts. The plant brought \$40,000. The business will be carried on in Gallon in the plant of the Gallon Wagon & Gear Company.

The Cincinnati, Middletown & Dayton Transportation Company, Dayton, Ohio, has recently completed experiments with an iron hulled whaleback power boat for use on the Miami and Erie Canal between Dayton and Cincinnati. The new boat proved so satisfactory that others will be built at once and will probably displace the ancient mule drawn boats now used on the canal.

The Continental Sugar Company, Fremont, Ohio, manufacturer of beet sugar, has executed a mortgage for \$250,000 to provide funds for doubling the capacity of its plant, and contracts for the work will be placed at once. Additional engines, boilers and sugar equipment will be required. George Collins, Cleveland, is president and F. T. Sholes, Cleveland, is secretary of the company.

The Gemmill Telephone Mfg. Company, Orrville, Ohio, will establish a factory in the old organ shop at Orrville. James I. Gemmill is the head of the company.

The Mitzel Rubber Company has been organized at Akron, Ohio, by H. F. Mitzel and will locate a factory at Carrollton, where the citizens have raised a bonus. A two-story brick factory, 40 x 180 feet, will be erected at once and 100 men will be employed in the manufacture of mechanical rubber goods. At present the company is occupying temporary quarters in Akron.

The Munson Heater Company has been organized at Connelville, Pa., and will erect a plant for the manufacture of hot air heaters. The company will erect a building, 32 x 120 feet, and expects to enlarge it within a year. The hot air heater is the invention of George A. Munson, Connelville, and is covered by letters patent. In addition to G. A. Munson there are in the company J. C. Munson and W. J. Woodall, the latter being an expert in hot air heating.

The Forsyth Pattern Company, Youngstown, Ohio, has received a large order for patterns from the Sharon Steel Hoop Company, Sharon, Pa.

The Lima Insulator Company, Lima, N. Y., has organized to manufacture porcelain insulators for both high and low voltage work and will produce anything from a pony size for telegraph and telephone work up to 70,000 volt working pressure lines for transmitting power. The company is building a new plant, which will be equipped with the best clay working machinery and will be ready to begin manufacturing in about ten weeks. It has not been fully decided whether a steam or a gasoline engine will be installed.

The Blakeslee Forging Company, Plantsville, Conn., has purchased the linesman's climbers business of John Donnelly, Branford, Conn., together with all machinery and stock of goods, and has moved them to the Plantsville factory. The company is adding to its drop forging equipment with a view to increasing the output of that department.

The St. George Pulp & Paper Company, St. George, N. B., will erect a plant at Norwalk, Conn., for the manufacture of paper from wood pulp, which will be produced at the New Brunswick plant of the company.

Morris & Lewis, Moline, Ill., dealers in scrap iron, metals, steel, &c., are erecting a brake shoe factory. The first building will be 100 x 170 feet in dimensions, one story in height and of brick construction. This building will contain the foundry department and will also serve as a machine shop until an additional building is erected. The company is anxious to have the building completed for the early fall trade, and the work of building is being pushed as rapidly as possible. The company has already a complete line of machinery, although additional equipment may be required later.

The American Car & Foundry Company has closed a deal for the purchase of the Memphis plant of the Southern Car & Foundry Company, the sale having been made by the receivers of the Southern Company.

The Pennsylvania Portland Cement Company, recently organized at New Castle, Pa., will buy all of the capital stock of the Marquis Limestone & Clay Company, which supplies all of the limestone and nearly all of the red brick and fire brick used by the New Castle iron plants. The Marquis Company has several miles of railroad track in the city.

The Dopp Purification & Softening Company, Buffalo, has been incorporated to manufacture apparatus and construct plants for the purification of water; capital, \$10,000; incorporators, Wm. H. Dopp, Geo. H. Dunbar and Maurice B. Patch, all of Buffalo.

The Russell Power & Mfg. Company has been incorporated by Charles R. Huntley, Wm. R. Huntley and Daniel T. Naab of Buffalo, officials of the Buffalo General Electric Company. Nominal capital, \$10,000. The company's charter provides for the manufacture and distribution of electric power, light and heat in Central and Eastern New York, principally in the counties of Hamilton, Herkimer, Oneida, Madison, Fulton, Otsego, Montgomery, Schenectady and Schoharie.

The Tweeddale Water Softening Company, Fisher Building, Chicago, has given to the United States Wind Engine & Pump Company, Batavia, Ill., a license for the sole manufacture and sale of Tweeddale water softening systems for the United States, covering a period of ten years. The system was illustrated in *The Iron Age* of January 14, 1904. Present employees of the Tweeddale Company have been taken over by the United States Wind Engine Company. C. S. Burt is president of the Tweeddale Water Softening Company; David Laughlin, treasurer of the Rock Island Railway Company, is secretary, and E. F. Jones of the International Harvester Company is treasurer. Its stockholders are mainly officials of railroads and of the Harvester Company. Tweeddale systems are in use by the Republic Iron & Steel Company at Birmingham, Ala.; the Boston & Denver Consolidated, at Denver; Deering Division, International Harvester Company, Chicago; Maple Leaf, at St. Paul, and plants are now being built as follows: Troy Laundry Company, Columbus, Ohio, 10,000 gallons per hour; Paris Laundry Company, Chicago, 15,000 gallons per hour; Inland Steel Company's mines, De Soto, Ill.; Commercial Distilling Company, Terre Haute, Ind., 10,000 gallons per hour; Merchants Distilling Company, Terre Haute, Ind., and the American Distilling Company, Pekin, Ill., of the same capacity; while the Hamilton Steel & Iron Company, Hamilton, Ont., has just entered into a contract for a plant of 15,000 gallons per hour.

The Johnson Iron Works, Algiers, La., recently made a test of a new type of trench excavating machine invented by Jas. W. T. Stephens, assistant engineer of the Sewerage and Water Board, New Orleans. The machine consists of a combination of the scoop shovel and conveyor principles. The city of New Orleans is now engaged in installing a sewage system of great magnitude, and the performance of this machine is being watched with interest by engineers and contractors, as it may have a marked bearing on the cost of the New Orleans improvement.

A charter was issued at Harrisburg this week to the Quaker City Metallic Bedstead Company, Philadelphia, with \$80,000 capital stock. Isaac Plout, Lorraine Hotel, Philadelphia, is a director.

The Walton-Van Huffel Mfg. Company, founders and machinists, Galesburg, Ill., has arranged with the Spartan Mfg. Company to manufacture the latter company's product, consisting of Corn Belt feed mills. The company has contracts for considerable structural iron work, including the erection of a 50-foot stack for the Abingdon Wagon Company.

The Indestructible Post Company, successor to the fence post department of the Inland Steel Company, Chicago, has purchased the Eaton box factory at Paw Paw, Mich., which will be remodeled for the manufacture of indestructible posts with the particular view of supplying the vineyard section of Michigan. C. E. Case, Michigan representative of the company, will have charge of the Michigan plant. A new plant is nearing completion at Pennville, Ind., and a plant is in operation at Chicago Heights, Ill., the latter plant doing the work of rolling sections for the other two. It is expected that shipping can commence from both the Paw Paw and Pennville factories September 1.

The Illinois Engineering & Machine Company, Cartersville, Ill., has been incorporated with a capital stock of \$20,000, the incorporators being F. J. Bird, George Hall and F. W. Richart. The company will make coal mining equipment, such as weigh hoppers, screens, pit cars, &c.

The Dornfeld-Kunert Company, composed of the E. Kunert Mfg. Company, Watertown, Wis., and J. F. Dornfeld, Chicago, has completed its plant at Watertown for the manufacture of boilers, tanks, stacks, bridges, castings, and brewing, malting and elevating machines. The leading specialty of the company is the construction of malting and grain storage plants and the Dornfeld patent malting drum. The new buildings have a total floor area of 25,000 square feet, divided between boiler shop, erecting shop, foundry and supplementary buildings.

The Ashley Valve Company, 136A Liberty street, New York, has been organized to manufacture a line of valves and steam specialties. F. M. Ashley is the manager. The company is having its goods manufactured under contract and does not expect to begin manufacturing for itself for some time.

The contracts for the new buildings of the Vehicle Equipment Company, Thirty-seventh street and Church avenue, Brooklyn, will be let next week. The main building will be 100 by 500 feet, and in addition there will be several smaller buildings. A 300 horse-power engine and 500 horse-power boilers have been installed in the company's new power station. The machine shop was not destroyed in the recent fire.

The Iron and Metal Trades

Our monthly statistics of the production of Pig Iron show that the make, exclusive of Charcoal Iron, was 1,082,794 tons in July, as compared with 1,292,030 tons in June, and the maximum, this year, of 1,557,267 tons in April. In spite of this small output, stocks accumulated during July to the extent of 46,322 tons. On the face of it, therefore, it looks as though consumption were still unable to cope with production. The returns, however, show that the active capacity declined from 272,300 tons on July 1 to 246,090 tons per week on August 1, so that we are safely within the limits of consumption if the latter is only up to the July record. Everything, however, points to a better figure, because the July requirements are always low, owing to the closing down of mills and foundries for repairs.

It looks, therefore, as though we had at last reached the point where we are turning the corner, if production remains on the present low plane. The only fact which justifies any expectation to the contrary is that Alabama may soon resume her normal output, when the labor troubles are at an end.

The production of the merchant furnaces, which was 583,000 tons in April, 606,000 tons in May and 503,000 tons in June, fell to 388,000 tons in July, thus showing clearly how sharply their production has been restricted. From May 1 to August 1 they accumulated 223,000 tons of iron, the bulk of it in May and June.

During the week there have been heavy sales of Pig Iron by a number of blast furnaces located along the lakes, and what is the encouraging feature of it is that in several conspicuous instances the buyers have taken deliveries extending over eight and ten months.

The Southern producers have figured in the markets to only a very limited extent.

A good deal of fuss is being made over the question whether the Republic-Pittsburgh Steel conversion arrangement is or is not a technical violation of the rules of the Billet Association. That "gentlemen's agreement" has been of so little consequence for so long a time that its final collapse should not create a ripple.

In the trade it has long been regarded as a very much more serious matter that evasions of the terms of the Beam and Plate agreement are claimed to be taking place. These are quite rigid pools, whose disruption would force a readjustment in important interests. The Rail pool has little more to expect during the present year.

Reports from Europe indicate that the German Steel syndicate is having its troubles and has been forced to put prices on Billets and Bars back to the figures which prevailed before its formation.

A fair tonnage is moving in many of the finished lines. The lower quotations on Wire Nails which have prevailed for some weeks are now tacitly accepted by all, although the "official" price still lives.

Among the larger contracts awarded during the week is one for 15,000 tons of Pipe for the Kansas oil fields. Some very good tonnage is coming up in the Structural branch, and there is talk of a little more activity in the lake shipyards this fall and winter.

A Comparison of Prices.

Advances Over the Previous Month in Heavy Type,
Declines in Italics.

At date, one week, one month and one year previous.

Aug. 10, Aug. 3, July 13, Aug. 12,
1904. 1904. 1904 1903.

PIG IRON:

Foundry Pig No. 2, Standard, Philadelphia	\$14.25	\$14.25	\$14.25	\$16.75
Foundry Pig No. 2, Southern, Cincinnati	12.00	12.00	11.75	15.25
Foundry Pig No. 2, Local, Chicago	13.25	13.25	13.25	17.25
Bessemer Pig, Pittsburgh	12.85	12.85	12.35	18.85
Gray Forge, Pittsburgh	12.00	11.85	12.00	16.00
Lake Superior Charcoal, Chicago	15.00	14.50	14.50	21.00

BILLETS, RAILS, &c.:

Steel Billets, Pittsburgh	23.00	23.00	23.00	27.00
Steel Billets, Philadelphia	24.00	24.00	24.00	28.00
Steel Billets, Chicago	22.00	22.00	24.00	28.00
Wire Rods, Pittsburgh	28.00	28.00	28.00	35.00
Steel Rails, Heavy, Eastern Mill	28.00	28.00	28.00	28.00

OLD MATERIAL:

O. Steel Rails, Chicago	10.00	10.00	9.50	16.50
O. Steel Rails, Philadelphia	11.50	11.50	11.50	18.00
O. Iron Rails, Chicago	15.00	15.00	14.00	18.50
O. Iron Rails, Philadelphia	14.00	13.75	14.50	19.50
O. Car Wheels, Chicago	11.00	11.00	10.50	21.50
O. Car Wheels, Philadelphia	11.00	10.50	11.00	19.00
Heavy Steel Scrap, Pittsburgh	11.50	11.00	10.50	19.00
Heavy Steel Scrap, Chicago	9.25	9.00	9.00	15.00

FINISHED IRON AND STEEL:

Refined Iron Bars, Philadelphia	1.48½	1.48½	1.48½	1.55
Common Iron Bars, Chicago	1.35	1.30	1.30	1.60
Common Iron Bars, Pittsburgh	1.30	1.30	1.30	1.60
Steel Bars, Tidewater	1.49½	1.49½	1.49½	1.70
Steel Bars, Pittsburgh	1.35	1.35	1.35	1.60
Tank Plates, Tidewater	1.74½	1.74½	1.74½	1.78
Tank Plates, Pittsburgh	1.60	1.60	1.60	1.60
Beams, Tidewater	1.74½	1.74½	1.74½	1.73½
Beams, Pittsburgh	1.60	1.60	1.60	1.60
Angles, Tidewater	1.74½	1.74½	1.74½	1.73½
Angles, Pittsburgh	1.60	1.60	1.60	1.60
Skelp, Grooved Steel, Pittsburgh	1.32½	1.32½	1.32½	1.82½
Skelp, Sheared Steel, Pittsburgh	1.32½	1.32½	1.32½	1.90
Sheets, No. 27, Pittsburgh	2.00	2.00	2.00	2.60
Barb Wire, f.o.b. Pittsburgh	2.40	2.45	2.50	2.60
Wire Nails, f.o.b. Pittsburgh	1.80	1.85	1.90	2.00
Cut Nails, f.o.b. Pittsburgh	1.65	1.65	1.75	2.15

METALS:

Copper, New York	12.50	12.50	12.62½	13.00
Spelter, St. Louis	4.75	4.75	4.75	5.45
Lead, New York	4.20	4.20	4.20	4.12½
Lead, St. Louis	4.02½	4.00	4.15	4.05
Tin, New York	26.25	27.00	26.25	28.25
Antimony, Hallett, New York	7.00	7.00	7.25	6.00
Nickel, New York	40.00	40.00	40.00	40.00
Tin Plate, Domestic, Bessemer, 100 pounds, New York	3.49	3.49	3.64	3.99

Chicago.

FISHER BUILDING, August 10, 1904.—(By Telegram.)

Seekers who are optimistically inclined have no difficulty in reading a bright future in present conditions. There is every prospect that this year's corn crop will be one of the largest ever harvested, and that the aggregate income to the farmers from it will far exceed any previous harvest because of the high prices prevailing. Crops throughout the West are large, and the returns to the farmers will be excellent. The good times hoped for are being forecasted by implement and hardware dealers, who have sent in orders for fall shipment that are exceptionally large. It is currently reported that the number of freight cars owned or controlled by railroads serving the corn and spring wheat belt will not be sufficient to move the crop, and from this it is argued that railroads must soon send in rush orders for cars in large numbers if they are going to take care of the agricultural freight. On this hypothesis it is argued further that the railroads will be compelled by a dawning prosperity to begin the purchase of necessary supplies for putting their equipment in shape to take care of increased business. When railroads do begin buying it is thought that that will be the signal for a general buying movement that may become a stampede. Pig Iron is moving freely, particularly from Northern furnaces, and a tonnage is being booked for future delivery that is satisfactory to the producers. Even the Southern furnaces, who are holding at prices only 10c. below the Northern minimum, are doing some business at their advanced price. In the Billet market the conversion deal by which the Republic Iron & Steel Company will deliver to the Pittsburgh Steel Company more than 100,000 tons of Billets at \$19 or less, at Monessen, is the chief topic

of conversation, and is taken to represent about the actual value of Billets in terms of present Pig Iron prices. Electric railroads are buying some Rails in 500 and 1000 ton lots. The Structural Steel market improves weekly from mill, with a very good showing on pickup orders from stock. Plates share in the same improved demand. Even Sheets seem to have a little better tone. The Pipe business is quite active again, and some improvement is noted in the demand for Boiler Tubes. The leading producer of Cast Iron Pipe reports a busy week, with a comfortable tonnage booked in small lots and several large contracts in prospect. Old Materials are firm, or advancing as the result of speculative demand. Wire products show no change either for better or worse. Coke is finding a readier market than it has for three months, which is not saying much.

Pig Iron.—The activity among producers and sellers of Northern Pig Iron is increasing rather than the reverse, and a favorable indication of the situation is the fact that the large aggregate of sales is made up of a multitude of comparatively small orders covering a wide range of territory and a great variety of industries; \$13.25, Chicago, the minimum quoted last week, is difficult to obtain now. We repeat the quotation, however, for another week with the caution that it is not impossible by the time this report is read the \$13.25 Iron may have disappeared from the market. It is true that large sales are being made on the \$13.50 basis for delivery up to the end of 1904. We advance our minimum price on Southern Iron 25c., making \$9.50, Birmingham, for No. 2 the bottom price. It is held, however, that there are Irons high in phosphorus or sulphur that will grade No. 2 by fracture that are still being offered as low as \$9.25 basis. Only a small tonnage of Southern Iron is being moved in this market, as the bulk of the buying goes to Northern furnaces. An order for several thousand tons of Basic Iron was placed by a local consumer, but prices and details are withheld. The supposition is that the Iron was furnished by a Northern producer, probably the same one that furnished the Grand Crossing Tack Company its 10,000 tons some weeks ago. The conversion deal made by the Republic Iron & Steel Company with the Pittsburgh Steel Company is commanding a good deal of comment in this market, and on every hand the Republic Iron & Steel Company is receiving congratulations for having landed this large tonnage. There is a general feeling in the trade that we will not again see \$9 Southern nor \$13 Northern Iron in this market in the year 1904. Lake Superior Charcoal Iron has shown greater strength in the last few days, and we advance our minimum to \$15 instead of \$14.50. The lower prices named in the following table cannot always be secured for small tonnages. We quote:

Lake Superior Charcoal.....	\$15.00 to \$15.50
Northern Coke Foundry, No. 1.....	13.75 to 14.00
Northern Coke Foundry, No. 2.....	13.25 to 13.50
Northern Coke Foundry, No. 3.....	13.00 to 13.25
Northern Scotch, No. 1.....	13.75 to 14.00
Ohio Strong Softeners, No. 1.....	14.55 to 14.80
Ohio Strong Softeners, No. 2.....	14.05 to 14.55
Southern Silvery, according to Silicon..	14.15 to 15.15
Southern Coke, No. 1.....	13.65 to 13.90
Southern Coke, No. 2.....	13.15 to 13.40
Southern Coke, No. 3.....	12.90 to 13.15
Southern Coke, No. 4.....	12.15 to 12.40
Southern Coke, No. 1 Soft.....	13.65 to 13.90
Southern Coke, No. 2 Soft.....	13.15 to 13.40
Southern Gray Forge.....	12.15 to 12.40
Southern Mottled and White.....	11.90 to 12.15
Malleable Bessemer.....	13.75 to 14.00
Standard Bessemer.....	14.25 to 14.75
Jackson County and Kentucky Silvery, 6 to 10 per cent. Silicon.....	16.30 to 18.30
Alabama Basic.....	13.00 to 13.15
Virginia Basic.....	13.85 to 14.10

Billets.—The dominant topic of conversation just now is the big conversion deal by which the Republic Iron & Steel Company will convert into Billets 110,000 tons of Bessemer Pig Iron for the Pittsburgh Steel Company. The topic is discussed not only because of the magnitude of the deal, but because the delivered prices of these Billets at the Wire mill at Monessen will be several dollars a ton below the association prices; not that the association price has represented actual market prices, but because the magnitude of this deal brings the relative value of Pig Iron and Billets into the limelight more prominently than anything that has happened for a long time. Meanwhile association prices are unchanged. Pool price is \$24 per gross ton, Chicago, for Billets 4 x 4 and larger, for either Open Hearth or Bessemer, for forging or rolling purposes, with extras for smaller sizes and extras for high carbon analysis.

Rails and Track Supplies.—An Eastern producer has taken an order for 2200 tons of Standard Section Rails for a Western electric road, and the leading producer also is booking occasional orders for fair sized lots from trolley interests. Steam roads seem to be buying very little, although claim is made that specifications on contracts are coming in better than they have been. Standard Sections are unchanged on the \$28 basis, and Light Sections range from \$22 to \$25 per gross ton. Angle Bars are unchanged at 1.35c. to 1.40c. Spikes are now quoted at 1.65c. to 1.70c. in car lots from mill and as high as 1.85c. in small lots from store. Track Bolts are selling at 2.20c. to 2.25c.,

base, from mill, with Square Nuts, and 10c. to 15c. extra for Hexagon Nuts, with an advance of about 15c. for shipment from store.

Structural Material.—The addition to the Fort Dearborn Building will require about 1000 tons of Steel, and the new building on Jackson boulevard, across from the Board of Trade, which is understood to be for the Stock Exchange, will require a somewhat larger tonnage. Architects for neither of these buildings have been announced. Chicago representatives of a mill east of Pittsburgh announce that the business for July in Structural Material exceeds any July in the history of the Chicago office and is the best month this year thus far save one. Business in Structural Material from store also seems to be improving. The Inland Steel Company, which has closed its Sheet mill, is concentrating its efforts on its Structural and Bar departments. Prices are unchanged, as follows: Beams and Channels up to and including 15 inches and Angles 3 inches on one leg and larger, 1.76½c., Chicago; Tees, \$1 per ton extra. Store prices on Structurals are as follows: Angles, Beams, Channels and Zees, base sizes, 2c. to 2.10c.; Tees, 2.05c. to 2.15c., either random lengths or cut to lengths 5 feet and over.

Plates.—Bridge and tank builders are evidently enjoying an improved trade, as is illustrated by the increase in their orders for Plate. Boiler shops do not seem to have advanced in quite the same ratio, though their business is evidently growing better. Association prices are unchanged, as follows: 1.60c., Pittsburgh, for ¼ inch and heavier, 1.70c. for 3-16 inch, 1.75c. for No. 8, 1.85c. for No. 9. Store price on all gauges from No. 10 to the heaviest is 2c. to 2.10c., f.o.b. warehouse, with the usual extras for wide widths and special qualities.

Sheets.—We make no change in the prices which we have been quoting for the last three weeks. The general tone of the Sheet business seems to be improving, however, and an advance in prices is not impossible. We repeat last week's quotations without change: One Pass Cold Rolled Blue Annealed, Nos. 9 and 10, 1.76½c.; Nos. 11 and 12, 1.86½c.; Nos. 13 and 14, 1.91½c.; Nos. 15 and 16, 2.01½c.; Nos. 18 to 20, 2.01½c. to 2.06½c.; Nos. 22 to 24, 2.06½c. to 2.11½c.; No. 26, 2.11½c. to 2.16½c.; No. 27, 2.16½c. to 2.21½c.; No. 28, 2.26½c. to 2.31½c.; No. 29, 2.41½c. to 2.46½c.; No. 30, 2.51½c. to 2.56½c. Store prices on Sheets are unchanged, as follows: No. 10 and heavier, 2c. to 2.10c.; No. 12, 2.05c. to 2.15c.; No. 14, 2.10c. to 2.20c.; No. 16, 2.20c. to 2.30c.; No. 18, 2.30c. to 2.40c.; No. 20, 2.30c. to 2.40c.; No. 22, 2.35c. to 2.45c.; No. 24, 2.40c. to 2.50c.; No. 26, 2.50c. to 2.60c.; No. 27, 2.60c. to 2.70c.; No. 28, 2.70c. to 2.80c.; No. 29, 2.85c. to 2.95c. Galvanized Sheets are being sold in this market pretty generally at 80 and 5 to 80 and 7½ discount, Pittsburgh, for carload lots, and it is claimed that 80 and 10 is no longer available; 75 and 10 and 75, 10 and 5 are the ruling store quotations on small lots, though large desirable specifications would bring a little better price, f.o.b. Chicago warehouse.

Bars.—It appears that 1.30c. Iron has disappeared from this market, and that 1.35c. is now the minimum, but one never knows what a mill will do when confronted with a large and desirable specification subject to open competition. Steel Bars are unchanged in their association price of 1.51½c., base, half extras, Chicago, in carload lots for Bessemer and 5c. extra for Open Hearth. The Bar Association meeting, to be held in New York this week, will, it is thought here, have an important bearing on the attitude of association members toward independents or follow members, if such there be, who are shading prices. Soft Steel Angles, smaller than 3 inches on one leg, are unchanged in their prices of 1.45c., base, Pittsburgh, or 1.61½c., Chicago. Hoops are in slow demand, but prices are unchanged, nominally at least, at 1.71½c. rates, full extras. Store prices are as follows: Iron Bars, 1.70c. to 1.75c., base, full extras; Steel Bars, 1.70c. to 1.75c., base, half extras; Hoops, 2.10c. rates, full extras.

Merchant Steel.—It now transpires that the price of Agricultural Shafting was reduced 10c. per 100 lbs. at the last association meeting. This applies to Shafting from 1 to 9 feet long and ¾ inch to 3 inches diameter, inclusive. A corresponding reduction is made on sizes smaller than ¾ inch, but Shafting larger than 3 inches takes the regular Shafting discount whether agricultural lengths or not. These prices apply only to manufacturers of agricultural implements, including wind mills. Manufacturers of plows, harrows and similar lines are coming into line with contracts for their season's requirements for Agricultural Steel, particularly in shapes and specialties. Official prices on Merchant Steel are as follows: Open Hearth Spring Steel to the general trade, 1.90c. to 2.10c.; Smooth Finished Machinery Steel, 1.76½c. to 1.81½c.; Smooth Finished Tire, 1.71½c. to 1.76½c.; Sleigh Shoe, flat, 1.56½c. to 1.61½c.; Sleigh Shoe, concave and convex, 1.66½c. to 1.71½c.; Cutter Shoe, 2.25c. to 2.35c.; Toe Calk Steel, 2.06½c. to 2.11½c.; Crucible Tool Steel, 6½c. to 8c.; special grades of Tool Steel, 13c. and up; Shafting at 52 per cent. in car lots and 47 per cent. in less than car lots.

Merchant Pipe.—Business continues to improve in

Pipe, and there is a little more tendency on the part of lagging jobbers and dealers to order Pipe into their warehouses. There is such a large tonnage of Pipe due, which may come in all at once, that there may be said to be some danger in delaying placing of contracts until too late a date. The prices are unchanged. The following discounts are for carload lots, Chicago:

	Steel Pipe.		Guar. Wrought Iron.	
	Black.	Galv.	Black.	Galv.
1/4 to 3/4 inch.....	68.35	53.35	67.35	52.35
3/4 inch.....	71.35	61.35	70.35	60.35
1 to 2 inches.....	76.85	66.85	75.85	65.85
2 to 3 inches.....	75.35	65.35	74.35	64.35
3 to 12 inches.....	70.85	55.35	69.85	54.35

Boiler Tubes.—The business of contract Boiler shops is evidently growing gradually better, but it has not reached a point where Boiler manufacturers will lay in stocks of Tubes. The average Boiler maker is satisfied to order from store the exact requirements of each Boiler which he is employed to make. The store business, therefore, reflects the improvement in the craft some weeks before it is felt by the mills. Prices are unchanged. The discounts for less than carload lots, Chicago, are as follows:

	Steel.	Iron.	Seamless Steel.
1 to 1 1/4 inches.....	46.35	41.35	52.35
1 1/4 to 2 1/4 inches.....	58.35	41.35	40.35
2 1/4 inches.....	60.35	46.35	43.35
2 1/2 to 5 inches.....	66.35	53.35	up to 4 in. 50.85
6 to 13 inches.....	58.35	41.35	....

Carload buyers are given a two-point better discount than the above. Warehouse prices on Boiler Tubes for delivery from store, Chicago, are as follows:

	Steel.	Iron.	Seamless Steel.
1 to 1 1/4 inches.....	42 1/2	37 1/2	40
1 1/4 to 2 1/4 inches.....	52 1/2	35	37 1/2
2 1/4 inches.....	55	37 1/2	40
2 1/2 to 5 inches.....	62 1/2	47 1/2	47 1/2
6 inches and larger.....	52 1/2	35	..

Cast Iron Pipe.—Bids will be opened to-day (August 10) by the city of Columbus, Ohio, for 5000 tons of Cast Pipe, half of which is 48 inches in diameter and the rest assorted sizes, the Pipe to be used for an important addition to the sewerage system. Bids were opened last evening by Rockport, a suburb of Cleveland, for 700 tons, mostly 12-inch. In neither case have the actual lettings been reported. The city engineer of Chicago will announce his decision on the Pipe bids mentioned in last week's issue in a day or two. The week under review has been a busy one in the Pipe trade compared with the previous week, and the outlook is encouraging. Prices are unchanged, but firm at \$25.50, the maximum for 4-inch Water Pipe and \$24.50 for 6-inch and heavier, and \$1 extra for Gas Pipe. Better prices than these will be named on lots of several hundred tons and above.

Old Materials.—There is no doubt that prices on Old Materials are strengthening week by week under the impetus of speculative demand, and notwithstanding the fact that actual consumers of these materials are buying but little. The Pere Marquette and Rock Island roads both have small lists out, but otherwise the situation seems to be one in which owners of Scrap are holding for higher prices and users of Scrap are delaying their purchases in the hope of securing lower prices. We advance Heavy Melting Scrap and Wrought Pipe and Flues each 25c. per ton. The following quotations are per gross ton, Chicago:

Old Iron Rails.....	\$15.00 to \$15.50
Old Steel Rails, 4 feet and over.....	11.25 to 11.75
Old Steel Rails, less than 4 feet.....	10.00 to 10.50
Heavy Relaying Rails, subject to inspection.....	21.00 to 22.00
Heavy Relaying Rails, for side tracks.....	18.00 to 20.00
Old Car Wheels.....	11.00 to 11.50
Heavy Melting Steel Scrap.....	9.25 to 9.75
Mixed Steel.....	8.00 to 8.50

The following quotations are per net ton:

Iron Fish Plates.....	\$12.50 to \$13.00
Iron Car Axles.....	15.50 to 16.00
Steel Car Axles.....	13.50 to 14.00
No. 1 Railroad Wrought.....	10.75 to 11.25
No. 2 Railroad Wrought.....	9.75 to 10.25
Shafting.....	12.50 to 13.00
No. 1 Dealers' Forge.....	8.50 to 9.00
Wrought Pipes and Flues.....	7.50 to 7.75
Iron Axle Turnings.....	7.25 to 7.50
Soft Steel Axle Turnings.....	7.25 to 7.50
Machine Shop Turnings.....	6.75 to 7.00
Cast Borings.....	3.50 to 4.00
Mixed Borings, &c.....	3.50 to 4.00
No. 1 Mill.....	6.00 to 6.50
Country Sheet.....	4.50 to 5.00
No. 1 Boilers, cut to Sheets and Rings.....	7.00 to 7.50
No. 1 Cast Scrap.....	9.50 to 10.00
Steel Plate and Light Cast Scrap.....	7.75 to 8.25
Railroad Malleable.....	8.25 to 8.75
Agricultural Malleable.....	7.75 to 8.00

Metals.—There is an improvement in the market for Metals, but it is barely perceptible. Prices are unchanged since last week's report, except in the case of Zinc, which has advanced 1/4c. The present market is as follows: Casting Copper is being held at 12 3/4c. and Lake at 13c. Pig Tin is now quoted at 28c. to 28 1/4c. Pig Lead is quoted at 4.20c. for 50-ton lots, 4.10c. to 4.20c. for car lots and 4.40c. for less than car lots. Spelter is sold at 4.80c. to 4.90c. for car

lots and 5.10c. to 5.25c. for small lots. Sheet Zinc is 6 1/4c. for car lots of 600-lb. casks and 6 3/4c. for less than car lots. Old Metals are stronger and several advances in prices are noted. We quote Copper Wire and Heavy, 11 1/4c. to 11 3/4c.; Copper Bottoms, 10c.; Copper Clips, 11c. to 11 1/4c.; Red Brass, 9 1/4c.; Red Brass Borings, 8c.; Yellow Brass, Heavy, 7 1/4c.; Yellow Brass Borings, 6 1/4c.; Light Brass, 5 1/4c.; Tea Lead, 4c.; Zinc, 4.25c.; Pewter, No. 1, 17 1/2c.; Block Tin Pipe, 22 1/2c.

Coke.—The demand for Coke is improving, particularly for spot Coke. Local consumers have acquired the habit of delaying their purchases of Coke until the day before they need it, because of the fact that during the last four months they have been able to pick up cars from track whenever they needed the stuff. The condition has changed radically and now there is not enough Coke on tracks to supply legitimate demands. Prices have advanced somewhat and are now pretty fairly held on the basis of \$2 at the ovens or \$4.65, Chicago, for 72-hour Foundry Coke from the Connelville region and a shade lower from the other districts.

L. I. Bregman & Co., dealers in Iron and Steel Scrap and Railway Material, announce that they have opened an office at 652 Railway Exchange Building, Chicago. The general office of the firm is at Cleveland, Ohio.

Philadelphia.

FORREST BUILDING, August 9, 1904.

The outcome of business during the past few days has not confirmed the hopeful feeling which was manifested during the previous two or three weeks. It cannot be said that things are distinctly worse, but it is a disappointment to find that they are no better, and as this is the time when they should improve if they are going to improve at all, doubts are beginning to be felt whether any improvement will be realized this year or not. The feeling is certainly less optimistic than it was, although business is fairly maintained, but it is in a slow, lifeless kind of way, with little to encourage the hope of greater activity in the near future. Prices are not quotably lower, but there is an irregularity that is not conducive to confidence. There is a vague impression that something is wrong in the foundation of the business structure, and until that idea can be dissipated there is little prospect of activity. The rolling mill and the foundry interests are passing through a period of depression that indicates danger to prices, which as already stated are very irregular. Rumors of rebates in one form or another on finished products are very persistent, and in some instances they are too flagrant to be denied. The letter of an agreement may be maintained, but the spirit of it may be totally ignored. Some manufacturers make the objection that prices are higher than need be, and that business could be done at less money and still make a fair margin of profit. This may be so, but, on the other hand, where would prices be without an agreement as to a minimum selling price? It is the same old story, no need for an agreement when there is plenty of business, and almost impossible to maintain it when business is scarce. Whatever the outcome may be in this instance, there is reason to believe that immediate action will be taken to either maintain prices or make an open market where each one can make prices as he sees fit. Without being unduly pessimistic, there is little doubt that conditions are more unsettled at the present time than they have been for some time past, and they must of necessity be either better or worse in the near future, as the strain is too great to be borne for any length of time.

Pig Iron.—The promise of activity, which was regarded as somewhat probable a week or two ago, has not been realized, consequently the feeling in the trade is less sanguine in regard to the immediate future. There is some business doing, but it is in small volume, and on the average at lower prices than at any time this year, and although the declines are inconspicuous, the general tendency is toward lower figures. Last week \$14.50 for No. 2 X Foundry was the usual price, but in the majority of cases \$14.25 to-day is about as much as is claimed for good average qualities. Some still claim \$14.50 and over for special brands, but they are too exceptional to affect the general situation. The furnace report, which will no doubt be published in this issue of *The Iron Age*, will probably do much to decide the character of the market in the near future, and some good authorities are disposed to expect a favorable statement. This, however, will be definitely known by the time this is in print, so that it is hardly worth while to speculate on it, although if it should be favorable it will be pretty sure to have a strengthening influence. Meanwhile sales have been made for Philadelphia and equivalent deliveries at prices ranging as follows:

No. 1 X Foundry.....	\$15.00 to \$15.25
No. 2 X Foundry.....	14.25 to 14.50
No. 2 Plain.....	13.50 to 13.75
Standard Gray Forge.....	13.00 to 13.25
Ordinary Gray Forge.....	12.50 to 12.75
Southern No. 2 X Forge, rail.....	13.75 to 14.00
Basic.....	12.75 to 13.00
Low Phosphorus.....	17.50 to 18.00

Steel.—Business has been a little quiet during the past few days, although the local supply is pretty well absorbed from week to week. Price about \$24, delivered, for good sized lots and a trifle more on small quantities.

Plates.—The demand, while far from active, is a little better than it was last month, although the orders are mostly small and for prompt shipment. Large orders are scarce, and as large consumers are getting very little new work, the chances of material improvement are not strong. Stocks in hand, however, are quite small, so that when new work comes in immediate purchases have to be made to secure the necessary material. These conditions would quickly make a strong market if there should be any general improvement in the demand, which, of course, is only a question of time. Prices unchanged, as follows:

	Carloads.	Part carloads.
	Cents.	Cents.
Tank Steel, 3/4-inch and heavier.....	1.73½	1.78½
Tank Steel, 3-16-inch.....	1.83½	1.88½
Tank Steel, Nos. 7 and 8, B. W. G.....	1.88½	1.93½
Tank Steel, Nos. 9 and 10, B. W. G.....	1.98½	2.03½
Flange or Boiler Steel.....	1.83½	1.88½
Commercial Fire Box Steel.....	1.93½	1.98½
Still Bottom Steel.....	2.03½	2.08½
Locomotive Fire Box Steel.....	2.23½	2.28½
Plates over 100 to 110 inches.....	.05 per lb. extra	
Plates over 110 to 115 inches.....	.10	
Plates over 115 to 120 inches.....	.15	
Plates over 120 to 125 inches.....	.25	
Plates over 125 to 130 inches.....	.50	
Plates over 130 inches.....	1.00	
All sketches (excepting straight taper plates varying not more than 4 inches in width at ends, narrowest end being not less than 30 inches)...	.10	
Complete Circles.....	.20	

Structural Material.—There are no specially new features to notice this week. Business cannot be called active, but a good many small orders are picked up from day to day, making a fair average, taking it all in all. There are also some back log orders that can be worked on from time to time, so that the output is fairly satisfactory. Prices are nominally unchanged, as follows: Beams, Channels and Angles, 1.73½c. to 1.85c., according to specifications, and small Angles, 1.50c. to 1.55c.

Bars.—Business is in a very peculiar condition, some mills busy, others with almost nothing on their books. The aggregate demand, however, is not large, so that if some mills get large lots others have to take so much less as their share. Prices are supposed to be unchanged, but reports of cutting are as persistent as ever, although it is difficult to get at the exact truth. Meanwhile, 1.48½c. is quoted for both Refined Iron and Steel Bars.

Sheets.—There is not much demand and for the present inquiries do not promise much for the near future, although as stocks are believed to be light they may require frequent replenishment as the season advances. The situation is unsatisfactory, however, and manufacturers are not very hopeful in regard to the outlook.

Old Material.—The market is in a peculiar condition and is hard to understand. One of the difficulties is that some of the dealers are short of certain classes of Material, and instead of being sellers, are buyers, and in some measure are competing with themselves. The supply of spot Material is not large, and although consumption is light, it is hard scratching to get enough to go around unless by paying extreme prices. Quotations, therefore, depend more or less upon the circumstances in each individual case, but the range for deliveries in buyers' yards is about as follows:

No. 1 Steel Scrap, delivered.....	\$11.50 to \$12.00
Old Steel Axles, delivered.....	14.50 to 15.00
Old Iron Axles, delivered.....	17.50 to 18.00
Old Iron Rails, delivered.....	14.00 to 15.00
Old Car Wheels, delivered.....	11.00 to 11.50
Choice Scrap, R. R. No. 1 Wrought, delivered.....	13.00 to 14.00
Machinery Scrap, delivered.....	11.50 to 12.50
Low Phosphorus Scrap, delivered.....	16.00 to 16.50
Wrought Iron Pipe, delivered.....	9.50 to 10.00
No. 1 Forge Fire Scrap, delivered.....	9.00 to 9.50
No. 2 Forge Fire Scrap, Ordinary, delivered.....	7.50 to 7.75
Wrought Turnings, delivered.....	8.50 to 9.00
Cast Borings, delivered.....	6.50 to 7.00
Stove Plates, delivered.....	9.25 to 9.75

The Alabama Steel & Wire Company, Birmingham, Ala., reports that since it began the use of its own steel from its Gadsden plant at its rod, wire and nail mill at Ensley its wire drawers have earned twice as much money as they did on the Bessemer steel purchased before its own steel plant was complete. The steel mill at Gadsden went into operation June 24 and has been running continuously since then. The open hearth steel is stated to draw down finer without annealing than the Bessemer steel, and its quality is more uniform, as the steel is being made from the ore, coal and limestone owned and mined by the company direct.

Cincinnati.

FIFTH AND MAIN STS., August 10, 1904.—(By Telegraph.)

Pig Iron.—As has been previously stated, Southern Iron has retired almost entirely from the markets of the North with the exception of a limited territory in Indiana and Illinois and points West. Sales in the Central West are now confined almost entirely to Northern Iron, and only in rare cases does Southern Iron enter into the buyer's calculations. One sale of 1120 tons of Southern No. 3 Foundry for Mansfield, Ohio, delivery to be made over the last four months of the year, represents practically the business done in Southern Iron other than small lots. Some very heavy sales of Northern Iron have been closed during the week, involving something over 100,000 tons of Foundry Iron. These sales were mostly to makers of castings for the Pennsylvania Railroad work at New York. The business is said to have been taken at prices very close to \$11.40, Valley furnaces. In Chicago territory there has been quite a liberal buying, but in a general way it is thought the Southern furnaces have deprived themselves of a market by advancing prices, and that there will probably be little market for Southern Iron in the East or West until consumption has greatly increased, as Northern furnaces appear willing to continue business at present prices, and consequently no advance in Northern Iron can be expected until this state of affairs shall come to pass. The demand for Bessemer has improved, and some substantial business has been closed. Under the influence of this buying the price has gone up, and \$12.25, Valley furnace, now appears to be the market. Basic Iron has also come in for a good share of the business, while Foundry and Gray Forge are in light demand with supply limited. In a general way, production is reported to have greatly decreased during the last few weeks. This is probably due to the fact that furnaces are unable to dispose of stocks on hand, rather than from any desire to remain idle on account of prevailing prices. These premises seem to be borne out in the case of the Columbus furnaces blowing out with a stock of over 12,000 tons on hand. The same proposition would seem to hold good in regard to the furnaces at Wellston, Ironton and Hanging Rock, which are banked on account of inability to dispose of their product. The Iron held by these furnaces can be delivered practically to all points in Ohio on a \$0.25, Birmingham, basis, and it is suggested that the trade will have to absorb this supply before better prices can be expected. Foundry demand is still on the increase, but the movement is slow and unsatisfactory. This is due, no doubt, in a measure to the trouble existing at the present time between the foundrymen and molders. The men were served notice that present wages would be reduced 25c. per day. This they decline to accept, and fears are entertained of a strike on the 15th of this month. Freight rates from Hanging Rock district to Cincinnati, \$1.15, and from Birmingham, \$2.75. We quote, f.o.b. Cincinnati, as follows:

Southern Coke, No. 1.....	\$12.50 to \$12.75
Southern Coke, No. 2.....	12.00 to 12.25
Southern Coke, No. 3.....	11.50 to 11.75
Southern Coke, No. 4.....	11.25 to 11.50
Southern Coke, No. 1 Soft.....	12.50 to 12.75
Southern Coke, No. 2 Soft.....	12.00 to 12.25
Southern Coke, Gray Forge.....	11.00 to 11.25
Southern Coke, Mottled.....	10.75 to 11.00
Ohio Silvery, No. 1.....	15.65 to 16.15
Lake Superior Coke, No. 1.....	13.15 to 13.65
Lake Superior Coke, No. 2.....	12.65 to 13.15
Lake Superior Coke, No. 3.....	12.15 to 12.65

Car Wheel and Malleable Irons.

Standard Southern Car Wheel.....	\$16.25 to \$16.75
Lake Superior Car Wheel and Malleable.....	15.80 to 16.30

Coke.—A much better tone is evident in the demand for this commodity. There is a general stiffening and many of the cheaper grades that were sold a week or two since are being turned down. One agent reports an inquiry for 1000 cars, delivery running over ten months, which he was compelled to cut to one-half the tonnage and with a five months' delivery on account of operators declining to contract for later delivery. We quote best grades from \$1.75 to \$2, f.o.b. ovens.

Plates and Bars.—Quite an increase in activity is to be noted in the demand for Finished Material. It is understood that several local contracts of considerable magnitude are soon to be let that will consume quite a tonnage. The Bar market is somewhat better, but no substantial gains are reported. We quote, f.o.b. Cincinnati, as follows: Iron Bars, in carload lots, 1.40c., with half extras; the same in smaller lots, 1.70c., with full extras; Steel Bars, in carload lots, 1.48c., with half extras; the same in smaller lots, 1.80c., with full extras; Base Angles, 1.73c. in carload lots; Beams and Channels, in carload lots, 1.73c.; Plates, 3/4-inch and heavier, 1.73c., in carload lots; in smaller lots, 2c.; Sheets, 16-gauge, in carload lots, 2.05c.; in smaller lots, 2.60c.; 14-gauge, in carload lots, 1.95c.; in smaller lots, 2.50c.; Steel Tire, 3/4 x 3-16 and heavier, 1.68c., in carload lots.

Old Material.—The market for this class of material, viewed sentimentally, is stronger, while as a matter of fact there is very little change for the better. Inquiry has developed a trifle more strongly and a more hopeful feeling

exists. Prices are reported to be unchanged. We quote dealers' prices, f.o.b. Cincinnati, as follows: No. 1 Railroad Wrought Scrap, \$11 to \$11.50 per net ton; No. 1 Cast Scrap, \$9.25 per net ton; Iron Rails, \$14.50 per gross ton; Steel Rails, rolling mill lengths, \$11 to \$11.50 per gross ton; Iron Axles, \$15 per net ton; Car Wheels, \$11 to \$11.50 per gross ton; Heavy Melting Scrap, \$11.50 per gross ton; Low Phosphorus Scrap, \$11.50 to \$12 per gross ton.

The American Smelting & Refining Company has moved into its new quarters, at the northwest corner of Ninth street and Freeman avenue, Cincinnati, Ohio, where it will occupy a brick building 30 x 110 feet, with four floors. The old premises on Wingate street will be retained as a warehouse. The specialties of the company are Babbit Metal, Tin, Lead, Copper and Brass, with Soldering Metal as an extra special product. The present capacity is 7 tons of White Metal and 3 tons of Spelter per day.

Cleveland.

CLEVELAND, OHIO, August 9, 1904.

Iron Ore.—The market has been rather dull. Prices have held about as they were, under light buying, to piece out the needs of some furnacemen, who are finding the prospects a little better than they had anticipated. Vessel owners have been endeavoring to hold the freight rate steady, but have been forced to submit to a reduction to 70c. from Duluth, 60c. from Marquette and 50c. from Escanaba. These rates are the lowest that have been paid on the lakes for years. The movement of Ore down the lakes is uninterrupted as far as boat capacity is concerned, the decline in rates indicating a plethoric condition of tonnage. The only hesitancy is on account of the supply of railroad equipment, which is not quite so abundant, the demands of other trades beginning to take a little more of it. The movement from the lake docks to the furnaces is slightly heavier than it has been.

Pig Iron.—The market has been showing a much improved appearance during the past week and the tendency to decline has been checked. Buyers of Foundry Pig have been taking a little better supply for immediate shipment and are quite willing to contract through the remainder of the year. Many of them would buy even further ahead were they encouraged by the producers. Prices are about \$11.75 in the Valley for No. 2 for spot shipment and \$12 on contract. There is talk of lower prices, but this seems to be a scaling on analysis. There is a stronger movement in Malleable. The buying now is on the old basis of \$12 at the furnace. Many consumers are coming in to cover their needs for the full year and are asked, for that far ahead, an advance of 50c. to 75c. over the current prices. The tendency is also to buy both Basic and Bessemer. There are some good inquiries in, but they have not yet resulted in sales. Coke prices are a little stronger. The minimum is not quite so low among the smaller ovens. Good 72-hour Foundry Coke is now selling at \$1.90 to \$2, while Furnace Coke is selling on contract at \$1.55 at the oven as a minimum. The buyers are taking less than their usual requirements, but their demand shows an improvement. We quote Pig Iron prices, as follows, f.o.b. Cleveland:

Northern Coke, No. 1 Foundry.....	\$13.50 to \$13.75
Northern Coke, No. 2 Foundry.....	13.00 to 13.25
Northern Coke, No. 3 Foundry.....	12.50 to 12.75
Southern Coke, No. 1 Foundry.....	13.35 to 13.60
Southern Coke, No. 2 Foundry.....	12.85 to 13.10
Southern Coke, No. 1 Soft.....	13.35 to 13.60
Southern Coke, No. 2 Soft.....	12.85 to 13.10
Jackson County, 8 per cent. Silicon....	to 16.45
Hanging Rock Charcoal, No. 1.....	to 23.45
Southern Charcoal, No. 1.....	to 17.85
Lake Superior Charcoal.....	15.50 to 16.00

Finished Iron and Steel.—The improved situation which prevails in the East is having a certain effect upon the market in this territory. Much of the skepticism which has prevailed is now disappearing and the market has taken a turn for the better. The future seems to offer some better conditions for the trade. In Cleveland the starting up, on Monday, of the Empire Rolling mill gave a firmer tone to the Bar Iron market, as indicating a possibly better demand for that material. The competition is still strong, however, and conditions hardly call for any increased output. The buying has been slightly better. Prices are holding at about 1.30c. at the mill. There has been a slight improvement in the buying of Structural Steel. The lake shipyards have been receiving some inquiries for new ships to be built during the fall and the winter, but these are based on possibly lower prices for Steel. How much these inquiries may be based on an effort to break the price of Shapes is not known, but probably there is a vital connection between the two. In Plates there is a slight improvement. It is confined to buying for current needs, not reaching the contract stage. It seems also that the Sheet situation has picked up somewhat. The inquiries are better and the buying is in slightly increased lots. There is nothing like a buying movement un-

der contracts, but the market shows a better situation as pertains to current orders. These are in one to five carload lots. Prices are firmer, but have not advanced. The base price on mill sales for car lots of No. 27 Black Sheets is 2.05c. to 2.10c. The price for the same gauge out of stock is 2.50c., which is unchanged. Mill prices on Galvanized Sheets have not changed. Smaller mills are getting most of the Billet business at \$1 to \$1.50 a ton under the association price of \$23.50, Cleveland. The market has been holding steady at those prices.

Old Material.—The market is looking up a little, but the better demand hardly affects prices, since there is such a plethora of material. We continue to quote, all gross tons: Old Steel Rails, \$12; Old Car Wheels, \$11 to \$12; Heavy Melting-Steel, \$11. All net tons: Cast Borings, \$4; No. 1 Busheling, \$10 to \$10.50; No. 1 Railroad Wrought, \$11.50 to \$12; Wrought Turnings, \$6.50 to \$7; Iron Car Axles, \$16 to \$17; No. 1 Cast, \$10 to \$10.50; Stove Plate, \$7 to \$7.50.

Pittsburgh.

PARK BUILDING, August 10, 1904.—(By Telegraph.)

Pig Iron.—The market has been rather quiet since the large sales reported last week, as consumers principally require small lots and prefer to wait until the market has settled. On early delivery Bessemer, \$12, at Valley furnace, can be done, equal to \$12.85, Pittsburgh, but on fourth-quarter Iron the furnaces are now quoting \$12.25 to \$12.35, at furnace. We note a sale of 1000 tons of Basic at \$11.65, at furnace, which would be equal to \$12.50, Pittsburgh, but the Iron did not come here, and furnaces are quoting \$11.75, Valley, or \$12.60, Pittsburgh. We note a number of odd sales of Foundry, running from carloads to 100 or 200 tons, including one sale of 150 tons of No. 2 at \$12, at furnace, or \$12.85, Pittsburgh. Some sales, however, have been made at \$12.65, Pittsburgh. The quoted market is now \$12.85 to \$13, Pittsburgh, depending on tonnage, &c. We note a sale of 500 tons of Gray Forge to a local consumer at \$12, delivered, which is 25c. above what the same consumer paid a week previous for 1000 tons. We quote Forge at \$11.15, Valley, or \$12, Pittsburgh. The Westinghouse Electric & Mfg. Company has inquired for about 200 tons each of five different grades, and may place contracts to-morrow. About \$12.85, delivered Allegheny, for No. 2 is being quoted. There is nothing doing in Southern Iron here.

Iron Ore.—Sales are reported aggregating about 1,000,000 tons of Ore in the past ten days, principally to Valley furnaces and Steel companies like Lackawanna, Cambria, Pennsylvania, &c., to round out their mixtures. On standard Mesaba Bessemer as low as \$2.75 is reported done, while non-Bessemer have sold at \$2.35 to \$2.60 or \$2.65, the latter for a very good Ore running high in Iron and only 0.05 in phosphorus.

Steel.—There is much anxiety about the continuance of the Billet Association, some mills being much dissatisfied with the turn things have taken. Reports of a meeting of the full Billet Association are erroneous, the work being left to a committee, of which we have already reported a meeting yesterday in Pittsburgh. Further meetings will be held and a conclusion probably reached this week. Some Steel works are reported as preferring to drop the whole matter. A representative of the Lackawanna Company has been in Pittsburgh this week and took a contract for 3000 tons of Structural Material. The company is not rolling Beams yet. We note no important sales of Billets, but numerous conversion deals are being proposed by brokers and others.

(By Mail.)

The special committee of the Billet Association appointed at the last meeting to investigate charges of violations of the agreement has been investigating the conversion deal made by the Republic Iron & Steel Company, as announced in this report last week. A meeting of the committee was held August 9 at the office of the leading interest, but no definite action has been taken. There is a disposition to regard the matter as a closed incident, especially since the Republic Iron & Steel Company is now pretty well filled with Billet business for many months and a repetition of such a deal is not very probable. There is no question, however, that another such transaction would quite likely lead to a disruption of the association. So far as small lots are concerned it is harder to obtain them at concessions from the association price than was the case two months ago.

The principal transaction in Finished Iron was the letting of a long pending contract for some 15,000 tons of Merchant Pipe for a Pipe line from the new Kansas oil field, which went to the leading interest. Otherwise Merchant Pipe business is not very heavy, although prices are being closely adhered to.

The general position of the Iron and Steel market is that there is a little more business going both in Pig Iron and in Finished lines than was the case early in July and

that there is a slightly better feeling, but the large interests do not expect any great improvement this year and are somewhat disposed to decry the attempts of the daily press and individuals to make it appear that conditions are better than they are.

Ferromanganese.—The market continues quiet and we continue to quote English and domestic Ferro at \$41.50 to \$42 in large lots, delivered, and at \$42.50 for carload and smaller lots.

Muck Bar.—There is nothing new in Muck Bar, and we continue to quote best grades at \$24, delivered Pittsburgh.

Wire Rods.—There is not much doing in Wire Rods and we continue to quote at \$28 to \$28.50 for either Bessemer or Open Hearth.

Skelp.—The Skelp market is fairly firm, although there is hardly as much business going. A considerable proportion of the output of mills making Sheared Steel Skelp is going out for Plate purposes, as the price is so much lower than the regular prices of the Plate Association. We quote Skelp as follows: Grooved Iron, 1.37½c. to 1.40c.; Sheared Iron, 1.45c. to 1.47½c.; Grooved Steel, 1.32½c.; Sheared Steel, 1.35c.

Steel Rails.—Business in Standard Sections of Rails appears to be about over for the season, some of the roads which bought for this year early last summer having even more Rails than they can use. There is little interest in Rails for next year, and we continue to quote the current price at \$28, at mill. In Light Rails there are reports of even lower prices than have lately been quoted, one report being that some 30-lb. Rails were sold at \$18 at mill, but this cannot be confirmed. The ordinary quotations are \$20 to \$22, depending on weight. Nearly all the Light Rail business is going to mills making Rails from new Steel, the rerolling mills being able to compete only in occasional instances.

Structural Material.—A fair amount of Structural work is being placed. The South Side Elevated work in Chicago, involving some 22,000 tons, will probably be placed within a fortnight. The specifications for the elevated tracks for the Pennsylvania on Duquesne Way, Pittsburgh, are not completed yet. We quote: Beams and Channels, up to 15-inch, 1.60c.; over 15-inch, 1.70c.; Angles, 3 x 2 up to 6 x 6, 1.60c.; Zees, 1.60c.; Tees, 1.60c.; Steel Bars, 1.60c., half extras, at mill; Universal and Sheared Plates, 1.60c.

Plates.—There is no particular change in the Plate situation. The mills in the association are maintaining prices strictly on Plates 60 inches and wider, while narrower Plates, made by some mills outside the association, are being shaded more or less. We quote: Tank Plate, ¼-inch thick and up to 100 inches in width, 1.60c., at mill, Pittsburgh; Flange and Boiler Steel, 1.70c.; Marine, A. B., M. A. and ordinary Fire Box, 1.80c.; Still Bottom, 1.90c.; Locomotive Fire Box, not less than 2.10c., and up to 3c.; Plates over 100 inches to 110 inches in width, not less than 5c. per 100 lbs. extra; Plates over 110 inches to 115 inches wide, not less than 10c. extra; Plates over 120 inches to 125 inches wide, not less than 25c. extra; Plates over 125 inches to 130 inches wide, not less than 50c. extra; Plates over 130 inches wide, not less than \$1 extra; Plates 3-16 inch in thickness, \$2 extra; gauges Nos. 7 and 8, \$3 extra; No. 9, \$5 extra. Above prices are on carload lots, f.o.b. at mill, Pittsburgh, with 5c. extra for less than carload lots; terms, net cash in 30 days, and for all points of delivery in the United States except the Pacific Coast.

Sheets.—There is a slightly improved feeling in the Sheet trade, due principally to the fact that prices have not yielded any further despite the sharp competition and excess of capacity. In Galvanized Sheets there is a possibility of doing 80 and 10 off list on a very favorable order, but the regular quotation remains at 80 and 7½. We quote, on carload and larger lots for direct shipment, Black Sheets, one pass box annealed, No. 26, 1.95c.; No. 27, 2c.; No. 28, 2.10c.; Galvanized Sheets, 80 and 7½ off, or, in net prices: Nos. 22 and 24 Galvanized Sheets, 2.59c.; Nos. 25 and 26, 2.77c.; No. 27, 2.96c., and No. 28, 3.14c. All above prices are for carload and larger lots, jobbers charging the usual advances for small lots from store.

Iron and Steel Bars.—Some new business is expected in Merchant Steel Bars, as the agricultural interests are getting ready for their new season, but a number of these placed their contracts for Bars clear through to next July at 1.30c., before the advance to 1.35c. was made on March 14 last. On such old contracts specifications have been fairly good. We quote Bessemer Steel Bars at 1.35c. and Open Hearth at 1.40c., half extras, in carload or larger lots, f.o.b. Pittsburgh. Iron Bars are a trifle stronger, and on regular good quality the minimum is 1.30c., f.o.b. Pittsburgh, half extras, while some Bars made chiefly from Scrap might possibly be picked up at \$1 a ton less.

Spikes.—The market is unchanged and we continue to quote Spikes at \$1.55, Pittsburgh, per 100 lbs. for carload and larger lots and \$1.60 for less than carloads.

Hoops and Bands.—Not a great deal of new tonnage is

being placed, but the mills are getting out some tonnage on their old contracts. We quote Steel Hoops at 1.55c. and Bands at 1.35c., extras as per Steel card.

Merchant Pipe.—A 15,000-ton Pipe line contract has gone to the leading interest, as just noted. Prices are well maintained, discounts to consumers in carload lots remaining as follows:

	Steel.		Iron.	
	Black.	Galv.	Black.	Galv.
	Per cent.	Per cent.	Per cent.	Per cent.
¾, 1 and 1½ inch.....	70	55	69	54
1½ inch.....	73	63	72	62
2 to 3 inches.....	78½	68½	77½	67½
3½ to 6 inches.....	77	67	76	66
7 to 12 inches.....	72½	57	71½	56
Extra strong, plain ends, ¾ to 8 inches.....	69	59	68	58
Double extra strong, plain ends, ¾ to 8 inches.....	60	50	56	46

Boiler Tubes.—Not a great deal is doing in Boiler Tubes. We continue to quote discounts as follows:

	Steel.	Iron.
1 to 1½ inches.....	48	43
1½ to 2¼ inches.....	60	43
2¼ inches.....	62	48
2½ to 5 inches.....	68	55
6 to 13 inches.....	60	43

In carload lots discounts are two points lower than the above.

Merchant Steel.—There is some inquiry from agricultural implement makers, who are approaching their new season. We quote: Plow Slabs, ¾-inch and heavier, 1.60c.; Tire Steel, 1.55c. to 1.60c.; Sleigh Shoe, flat, 1.40c. to 1.45c.; Cutter Shoes, 2.05c. to 2.10c.; Plow Steel, 6 inches and under, 1.35c.; Toe Calk Steel, 1.85c. to 1.90c.; Crucible Tool Steel, 6c. to 8c. for ordinary grades and 12c. and upward for special grades. Shafting is 52 per cent. off in carloads and 47 per cent. in less than carloads, delivered.

Spelter.—The market is dull, consumption being rather light, while Ore prices are off \$1. We quote prime Western grades at 4.70c., Pittsburgh.

Tin Plate.—The independent mills are not showing much anxiety to book business at the new prices made by the leading interest, especially in view of the fact that it is understood that the new price is subject to immediate acceptance only and that the company would not take contracts at this figure. Some of the independent interests claim they can do a little better than make both ends meet at this price, while others are a little doubtful. One independent company has not signed the Amalgamated Association scale or made any attempt to start its mills since it shut down over a month ago. Others are running fairly full, being filled with old business, although all such business is subject to the new price, contracts having been taken guaranteed against the official price of the leading interest. We quote the market at \$3.30 for 100-lb. Coke Bright Plates, 30 days, less 2 per cent. 10 days, f.o.b. mill, Pittsburgh district.

Coke.—The Coke market has been considerably more active, on account of contracts by Valley and other furnaces. We note one contract for Standard Connellsville Furnace Coke at \$1.47, involving about 75,000 tons, for delivery through the first half of next year to a Valley interest which figured prominently in the Pittsburgh Steel and Republic conversion deal. We quote Standard Connellsville Furnace Coke at \$1.45 to \$1.50, depending on tonnage and delivery, and Standard 72-hour Foundry at \$1.75 to \$1.85, at ovens. Outside grades continue to be offered at \$1.35 and even lower for Furnace and \$1.60 for Foundry.

Iron and Steel Scrap.—The Steel interests are not buyers of Scrap at present except occasionally, and then only in very small lots, while there is a slightly better demand from rolling mills, foundries, &c. The Steel interests a fortnight ago were taking in some Scrap to their yards, but are indisposed to make further accumulations. One interest, which was bidding \$11.50, delivered, for Heavy Melting Stock, is now bidding only \$11.25, at which it will get nothing, as dealers are holding out for \$11.50 to \$12 and are not disposed to press sales. We note a sale by the Pennsylvania Company of 1200 tons of Rerolling Rails at \$11.50, while, on the other hand, the Pennsylvania Railroad still holds on to the 12,000 tons of long lengths it has been wanting \$15 for since last year, and came within 40c. on one occasion of getting. There have been no further sales of Low Phosphorus Scrap and it is understood the two principal local producers are holding out for \$15 to \$15.50 for their product, which the market would hardly pay. We quote prices as follows: Heavy Melting Stock, \$11.50 to \$12; Steel Turnings, \$7.50 to \$7.75; Cupola Scrap, \$10.50 to \$10.75; Cast Iron Borings, \$5 to \$5.50, and Bundled Sheet Scrap, \$8, all per gross ton. No. 1 Wrought Scrap is quoted at about \$10.50 per net ton.

Charles M. Schwab, who went abroad about six weeks ago to inspect the steel making processes used in the Krupp Works at Essen, returned last week.

The New York Machinery Market.

NEW YORK, August 10, 1904.

Now that work on the river sections of the Pennsylvania Railroad tunnel is well under way contractors are patiently awaiting the specification for the land sections, which it is estimated will require almost as much iron as the two tubes under the East and North rivers. There is yet to be constructed the tunnel on the New Jersey shore, which will be more than 1 mile long, and the one across Manhattan. The Pennsylvania Railroad Company informs us that specifications for the construction of the Manhattan section will probably be sent out for estimates in a month or two.

The only contract let this week by the O'Rourke Engineering Construction Company, 1 West Thirty-fourth street, New York, was for the boilers for the two power houses, aggregating 3200 horse-power. This was secured by the Stirling Company, 114 Liberty street.

Purchases of machine shop equipment are now being made by the Pennsylvania Railroad against the large list of tools recently issued by the company. The machines are being bought in small lots, which leads us to believe that the company intends to follow the policy it adheres to in issuing the specifications—a few tools each day. Under these conditions it is difficult to determine just what proportion of the amount of machinery has been secured, the orders being so scattered, but from what we can learn only a small part of that required has been arranged for. Among the orders thus far placed in this territory was one for five air compressors, which will be furnished by the Chicago Pneumatic Tool Company, New York. These compressors are intended for several of the company's shops, but none is to go to the new Trenton plant, the equipment for which, we understand, is not being purchased at this time. The company has placed an order with Manning, Maxwell & Moore, New York, for two Shaw cranes. These are to be of the electric traveling type and of 65 tons capacity each.

The Philadelphia & Reading Railroad, which recently sent out specifications for machine tools aggregating in value upward of \$100,000, is also buying a few tools. It is suspected that these purchases were made to supply urgent needs and that the company will shortly close for the entire lot.

The New York Central & Hudson River Railroad has lately placed some small orders for machinery.

While the Atchison, Topeka & Santa Fé Railroad has purchased almost all of the machine tools in its general list issued last May, the following has not yet been secured: One heaviest pattern motor driven driving wheel lathe to swing 84-inch flanged wheels, two 36 x 36 inch planers to plane 12 feet long, four 42-inch vertical boring and turning mills, two motor driven modern heavy pattern 51-inch vertical boring and turning mills, one modern heaviest pattern 84-inch vertical boring and turning mill, one 50-inch full universal automatic gear cutting machine, two Sellers No. 1 universal tool grinding machines, one nut facing machine, one motor driven locomotive driving wheel quaterning machine to take 84-inch flanged wheel, one portable locomotive crank pin truing machine, one heavy double geared motor driven bulldozer for railroad car work, one heavy self feed rip saw table with carrying out rolls. As was noted in these columns last week, the order for the greater portion of these tools was secured by Niles-Bement-Pond Company, New York. A number of the tools were purchased from Manning, Maxwell & Moore, New York, and the remainder went to the Jones & Lamson Machine Company, Springfield, Vt.; Marshall & Huschart Machinery Company, Chicago, Ill.; McDowell-Stocker & Co., Chicago, Ill.; Watson-Stillman Company, New York; Carse Bros., Chicago, Ill.; Buffalo Forge Company, Buffalo, N. Y.; Fairbanks-Morse Company, Chicago, Ill.; General Electric Company, Schenectady, N. Y.

For the new shops, being erected by the Mississippi River & Bonne Terre Railroad at Bonne Terre, Mo., the entire machinery equipment is to be furnished by Manning, Maxwell & Moore, New York. The order covers a variety of machine tools amounting in value to over \$20,000, and was secured through the firm's St. Louis branch, which is under the management of Charles L. Lyle. For some time Manning, Maxwell & Moore have sustained a traveler in the St. Louis territory and have just opened an office in the Frisco Building.

It is expected in the trade that the Lehigh Valley Railroad will shortly issue specifications for the machine tools for its new shops at Sayre, Pa., the list of which we are officially informed has not yet been prepared to completeness. These shops are to be devoted to heavy work, and some of the heavy tools from the company's other shops have been installed at that point. The cranes, of which there are 12, were secured some time ago, as was also the power plant equipment. The principal buildings erected at Sayre consist of a locomotive shop, 366 x 750 feet, and a blacksmith shop, 103 x 360 feet.

Plans have been completed by the Erie Railroad for the extensive improvements to be made to its terminal at Jersey City, and are now in the hands of the executives for their approval. The improvements in general contemplate the

erection of large shops at that point, but plans for the buildings have not been completed, and are not likely to be for some time, as it is the company's intention to make these the main repair shops on the road. Plans are completed, however, for temporary shops at Jersey City, which will be erected this summer, and which will be of fair size. Some of the tools of the Erie's recently issued \$145,000 list will probably be installed in the temporary shops, and later moved into the permanent buildings when they are erected.

Among the engineering projects which are likely to result in some large orders being placed in the machinery market within the next few months is the new power canal enterprise of the Niagara County Irrigation & Water Supply Company. The contract for the construction of this entire undertaking was awarded some time ago to the Frontier Construction Company, Niagara Falls and New York, which was organized for this special purpose. Owing to legal and other complications the company was frustrated in its plans to go ahead with the work, but recently all obstructions were removed, and active work on the physical development of the property has been commenced. The finances have been arranged for, and the plans and specifications have been completed to the extent that from now on operations will be carried on as fast as the details can be arranged. The Frontier Construction Company has contracted to deliver to the Niagara County Irrigation & Water Supply Company the entire plant in operation, and therefore will have full charge and let all contracts. It is the intention to subcontract all the work, bids for which will be received in September. There will be a canal 37,500 feet long, 120 feet wide and 20 feet deep, extending from the Niagara River at La Salle, around the city of Niagara Falls, to Devil's Hole, a natural embouchement in the wall of the gorge just below the whirlpool, and where there is a drop of 300 feet from the brink of the precipice. At this point the power house will be located, capable of generating 150,000 horse-power, the generators being located at the bottom of a huge penstock 300 feet in height. The company has received preliminary estimates for the mechanical equipment for the power plant, which will cost about \$2,000,000. It has been decided, however, to issue new specifications, and bids for the generating machinery will also be received in September. The 150,000 horse-power, which is to be generated in the first installation, has been disposed of, and as soon as the power is being delivered the company will construct a second station of 150,000 horse-power. The address of the chief engineer, M. H. Alberger, is Post Office Box 6, Niagara Falls, N. Y., and the New York office is located in Room 153, 68 Broad street.

Regarding the Erie Canal improvements, we are officially informed that plans and specifications for portions of the construction work are under consideration of the Canal Board and that advertisements for bids will be issued in the very near future.

There will be considerable mechanical apparatus required to equip the extensions to the plant of the Victor Talking Machine Company at Camden, N. J., plans and specifications for which have been completed by Dodge & Day, modernizing engineers, Philadelphia, who will purchase the machinery. There will be required 600 horse-power horizontal tubular boilers, four units, each 18 feet long, 72 inches diameter, with a working pressure of 125 pounds, natural draft; two horizontal automatic high speed engines, 160 and 240 horse-power, respectively, direct connected to a 100-kw. and a 150-kw. generator; 15 electric motors, ranging from 5 to 75 horse-power; two elevators, heating system, fire, feed water and vacuum pumps; switchboard and wiring, sprinkler system, water tanks, &c.

The boilers which the Babcock & Wilcox Company, New York, is to furnish for the new power station of the Public Service Corporation, on the outskirts of Jersey City, will aggregate 9000 horse-power. There are to be 15 boilers of 600 horse-power capacity each.

Complete machine shop and forge shop equipment is required by the Albany Forge Company, 80 State street, Albany, N. Y., for its new plant. The company was recently incorporated with a capital stock of \$80,000, and has purchased a 3-acre site on the Troy road just outside of the Albany city line, where it will erect a forge and furnace building, 60 x 100 feet, and a machine shop, 60 feet square. None of the machinery has as yet been secured. The officers are Charles L. Pruyn, president; M. H. Rochester, vice-president and treasurer; Franklin Townsend, secretary, and Thomas Prentice, manager.

The Cincinnati Industrial Bureau has just succeeded in locating a new industry at 1623 Blue Rock street, Cummins-ville, in that city, known as the Millcreek Valley Starch Company, incorporated with a capital of \$25,000 under the laws of Ohio, with Chas. B. Smith president, Silas B. Waters vice-president and Harry H. Hill secretary and treasurer, and the following additional directors: B. W. Gale, Chas. W. Schmidt and C. P. Goodman. The building has been secured on a lease of one year, with the privilege of two. The company expects before the end of its leasehold to purchase property and erect a large plant somewhere in the Millcreek Valley. It is understood that it is in the market for quite a number of machines, including boilers and engines,

and, in fact, a full line of machinery incident to the manufacture of starch.

Of the 31 lathes for the United States Government Arsenal at Rock Island, Ill., Manning, Maxwell & Moore, New York, were awarded the contract for 29. Nine of these lathes will be of the Putnam make.

Rauscher & Anders, 45 Wienstrasse, Vienna, Austria, dealers in tools and machinery, wish the names of concerns manufacturing electrical apparatus, machine tools, special machinery and tools, together with price-lists.

Manning, Maxwell & Moore, New York, have enlarged their Philadelphia quarters, and have taken a store at 721 Arch street, where a complete line of their machinery is displayed. This branch is under the management of George E. Randles.

The Emerson Steam Pump Company has moved its general office from Washington, D. C., to the factory at Alexandria, Va.

Carver & Co. have opened an office at 110 John street, New York, and are prepared to make assays and to work gold and silver ores by the latest improved process. The firm also supplies special machinery for gold and silver mines, including stamp mills, amalgamators, &c.

The Board of Public Service of Youngstown, Ohio, will receive proposals until August 18 for furnishing and erecting two centrifugal pumping engines of 10,000,000 gallons capacity, one air pump of capacity of 2000 cubic feet per minute, one centrifugal wash pump of a capacity of 3000 gallons per minute, two 200 horse-power boilers, two 125 horse-power boilers, five 24-inch iron body gate valves, one 30-inch iron body gate valve, 400 feet of 36-inch iron pipe and 10 tons of 24-inch flange pipe, all for the Water Works Department. G. T. Prosser is in charge of proposals.

Catalogues Wanted.—The Victor Metals Company, New York, which is erecting a rolling mill for the manufacture of Victor noncorrosive silver metal with sheets and rods, is desirous of receiving catalogues from manufacturers of rolling mill machinery, including furnaces.

New York.

NEW YORK, August 10, 1904.

Pig Iron.—Among the sales made during the past week was one for a lot of a few thousand tons to a pump plant, for prompt delivery. Some large purchases have been made during the past week by agricultural implement works in this State. They aggregate fully 18,000 tons, and in one case cover deliveries for ten months and the other for eight months. In both instances the sellers were lake furnaces. We quote for Northern brands: \$14.75 to \$15 for No. 1 Foundry, \$14 to \$14.50 for No. 2 Foundry and \$13 to \$13.25 for Gray Forge. Tennessee and Alabama brands are \$13.25 to \$13.50 for No. 2 Foundry and \$12.75 to \$13.25 for No. 3 Foundry.

Steel Rails.—The market is exceedingly quiet. We quote \$28 for Standard Sections and \$21 to \$23.50 for Light Sections, at tidewater.

Cast Iron Pipe.—Manufacturers report a somewhat better feeling. Inquiries have increased considerably during the past week and represent a much wider application for material. No noteworthy tonnages are included among these inquiries, but the total represented is considerably larger than for some time. Carload lots are quoted at \$25.50 per gross ton for 6 to 10 inch and \$25 for 12-inch, at tidewater, with lower prices prevailing on good tonnages.

Finished Iron and Steel.—The largest piece of work in the structural line which has come up for quite a long time is the proposed extension to the South Side Elevated Railroad in Chicago, for which the bids closed on Monday of this week. This contract calls for about 22,000 tons. The leading Structural interest has received a number of orders for bridges from Western railroads, and while none of these called for more than a few hundred tons, the appearance of such orders is taken as indicating the possibility of a better demand developing for railroad work. The labor troubles in the local building trade are expected to discourage building projects which were getting in shape for letting. Some apartment houses are talked of, which will take a fair quantity of Steel, but it is feared that the local demand for the remainder of this year will be discouragingly small. The Plate trade is dull, the principal demand coming from manufacturers of specialties. Boiler shops and shipyards are still far from active. The demand for Bar Iron is light, as is usual at this time of the year, but prices appear to be fairly maintained. We quote at tidewater as follows: Beams, Channels, Angles and Zees, 1.74½¢ to 2c.; Tees, 1.79½¢ to 2c.; Bulb Angles and Deck Beams, 1.84½¢ to 2.05c. Sheared Plates in carload lots are 1.74½¢ to 1.85c. for Tank, 1.84½¢ to 2c. for Flange, 1.94½¢ to 2.10c. for Marine and 1.94½¢ to 2.50c. for Fire Box, according to specifications. Refined Bar Iron, 1.44½¢ to 1.49½¢; Soft Steel Bars, 1.49½¢.

Old Material.—A little flurry in Heavy Melting Steel Scrap was caused by the appearance of some Eastern works

as buyers who desired quick shipments of material. Their purchases, however, were not large and the excitement speedily subsided. Railroads and dealers are holding their stock and are not disposed to press it for sale at present price. While the demand is light, the trade generally still manifests a hopeful disposition, confident that business must eventually improve. Quotations per gross ton, New York and vicinity, are approximately as follows:

Old Iron Rails.....	\$14.50 to \$15.00
Old Steel Rails, long lengths.....	12.50 to 13.00
Old Steel Rails, short pieces.....	10.50 to 11.00
Relaying Rails.....	16.00 to 17.00
Old Car Wheels.....	10.00 to 11.00
Old Iron Car Axles.....	15.50 to 16.00
Old Steel Car Axles.....	14.00 to 14.50
Heavy Melting Steel Scrap.....	10.50 to 11.00
No. 1 Railroad Wrought Scrap.....	12.50 to 13.00
Iron Track Scrap.....	11.00 to 11.50
Wrought Pipe.....	7.50 to 8.00
Ordinary Light Iron.....	4.50 to 5.00
Cast Borings.....	4.00 to 4.50
Wrought Turnings.....	6.60 to 6.50
No. 1 Machinery Cast.....	10.50 to 11.00
Stove Plate.....	8.00 to 8.50

Iron and Industrial Stocks.

Transactions have not been very large nor have fluctuations been wide during the week. Prices, on the whole, have been fairly firm, although a disposition to weakness was shown in the United States Steel stocks on Monday, following the publication of reports of dissensions among the members of the Billet Association. This influence was only temporary and a recovery occurred on Tuesday. The low price reached on United States Steel common during the week was 11½¢ and on the preferred 58¢. The low price on Tennessee Coal was 43¢ and on Republic preferred 42½¢. Last prices on active stocks up to 1.30 p.m. on Wednesday were as follows: Can preferred 41½¢; Car & Foundry common 18½¢, preferred 79¢; Locomotive common 21½¢, preferred 88¢; Colorado Fuel 36½¢; Pressed Steel common 32½¢, preferred 75¢; Railway Spring common 19½¢, preferred 76¢; Republic common 7½¢, preferred 43¢; Sloss-Sheffield common 37½¢, preferred 55¢; Tennessee Coal 43¼¢; United States Steel common 11½¢, preferred 58½¢, new 5's 78½¢.

Announcement is made of a proposition to place the stock of the National Steel & Wire Company in a voting trust for three years. The trustees are to be H. E. Huntington, Ogden Mills and H. W. Munroe. There are outstanding \$2,577,800 of preferred and \$2,993,700 of common stock of the company.

Dividends.—The Niles-Bement-Pond Company has declared a quarterly dividend of 1½¢ per cent. on the preferred stock, payable August 15, and 3¢ per cent. on the common stock, payable in instalments of 1½¢ per cent. September 15 and 1½¢ per cent. December 15.

The Pratt & Whitney Company has declared a quarterly dividend of 1½¢ per cent. upon the preferred stock, payable August 15.

The American Radiator Company has declared a quarterly dividend of 1¼¢ per cent. on the preferred stock, payable August 15.

The Philadelphia Company, Pittsburgh, has declared the regular semiannual dividend of 2½¢ per cent. on the preferred stock.

The United States District Court at Wilmington, Del., has dismissed the bill of complaint in the suit of Percy H. Brindage of New York against the Lobdell Car Wheel Company, in which he set forth that he organized the National Car Wheel Company, into which car wheel manufacturers were to combine, and that the Lobdell Car Wheel Company agreed to dispose of its plant and business for \$1,500,000, but failed to do so. The Lobdell works will continue as an independent concern.

An electric car using accumulators is in service between Dresden and the suburbs Coosehande and Muegeln. The vehicle consists of two single truck cars, which are permanently connected together by a flexible joint. Four 27 horse-power four-pole motors transmit power to the axles by gearing, the ratio of reduction being about 4 to 9. The two motors on each car are permanently connected in series and form one group. The wheel base is a little over 13 feet, and the wheels have a diameter of 1 m. The length of the car is 62 feet, its weight is 44 tons, and it carries 98 passengers. The battery consists of 184 double accumulator cells, each of 430 ampere-hours capacity, when discharged at 140 amperes. The charging pressure is 480 volts, and the mean pressure when discharging 365 volts.

Metal Market.

NEW YORK, August 10, 1904.

Pig Tin.—The price of Tin has declined slowly but steadily during the week, and but a very moderate volume of business has been passing. The decline is attributed partly to large shipments of Tin, which are on their way from the East, and also to the comparative absence of demand. The market at the close was quiet and easy, spot and August delivery being quoted at 26.65c. to 26.85c., and September at 26.62½c. to 26.75c. The London market shows a decline, present prices being £121 15s. for spot and £122 7s. 6d. for futures. The arrivals so far this month amount to 1140 tons, and the "afoats" are figured at 2629 tons.

Copper.—The Copper market is easy and very dull. It was reported to-day that the Calumet & Hecla Company had made a sale of a round lot of Copper for home consumption at 12.62½c. Quotations at the close were 12.50c. to 12.75c. for both Lake and Electrolytic. Casting Copper is quoted at 12.25c. to 12.50c. The London market shows a decline to £56 10s. for spot and £56 12s. 6d. for futures. Best Selected has declined 5 shillings to £60 15s. The exports so far this month have amounted to 6058 tons.

Pig Lead.—A quiet demand and unchanged prices characterize this market. The American Smelting & Refining Company quotes Desilverized in lots of 50 tons or more, shipment within 30 days, at 4.10c. Spot Lead from store, New York, is quoted at 4.20c. to 4.25c. St. Louis is a shade firmer at 4.02½c. to 4.5c. London cables are slightly higher at £11 16s. 3d.

Spelter.—Dullness continues to pervade the market for Spelter, but prices are steady at 4.85c. to 4.95c. for spot, with August deliveries at 4.80c. to 4.90c. St. Louis is unchanged at 4.75c. and London cables £22 2s. 6d.

Antimony.—Demand is light and the market is easier. Cookson's and Hallett's are quoted at 7c. and other grades at 6c.

Nickel.—The usual amount of business is passing and prices are steady, large lots being quoted at 40c. to 45c. and smaller quantities at 50c. to 60c.

Quicksilver.—The market is very quiet and weak. Flasks of 76½ lbs. were quoted to-day at \$42.50, with the prospect of lower prices at any time. London declined to £7 15s.

Tin Plate.—Nothing new has developed in the situation as regards Tin Plate. The market is rather quiet and shows some weakness. The recent reductions in price made by the leading producer have been followed by most of the independent mills. Comparatively little buying is being done, but the mills generally are busy on contracts previously placed. The American Sheet & Tin Plate Company is quoting \$3.30 per box, Pittsburgh, for 14 x 20, 100-lb. Coke Plates, making the price \$3.49, delivered in New York.

An automatic gas pump, which has recently been exhibited, is constructed upon a plan enabling it, when set in operation, to run automatically, and to produce as perfect a Torricellian vacuum as is possible. It has been devised to provide a comparatively portable machine, suitable to special laboratory work, and for researches requiring prolonged pumping. It is in three distinct parts: a small motor driven mechanical pump, a four-way control valve and a modified Toepler apparatus by means of which the final vacuum is obtained. Experiment has shown that the apparatus is fairly rapid in its action; in a preliminary trial, a Roentgen ray bulb of a capacity of 200 c. cm. was exhausted in 30 minutes.

The British Government Committee on Naval Boilers has issued its final report after four years of experiment, and declares unanimously that the water tube boiler is the most suitable for the navy, and selects the Babcock & Wilcox and the Yarrow types as the best for the purpose. Admiral Sir Compton Domville, president of the committee, adds to the report that his own experience with Belleville boilers has been favorable to them, and maintains that the earlier Bellevilles were poorly constructed and badly used, which would account for their failures.

The new express steamer "Kaiser Wilhelm der Zweite" on one of its Eastern runs during June, 1904, made the phenomenal rate of 23.58 knots. The best previous record was that of the "Deutschland" three years ago, when a speed of 23.51 knots was attained. Due to large quantities of ice, the ship took a more southerly passage than usual, departing very materially from the path of a great circle. The increased distance, 3112

knots, was covered in 5 days 11 hours 58 minutes. The best day's run was 564 knots, which was covered in 23 hours 10 minutes, or at the rate of 24.35 knots. The difference of 50 minutes between the chronometer length of this day and the time from noon to noon was due to the change in the longitude of the ship during that period. The average horse-power developed, at 79 revolutions per minute, was 44,600. The amount of coal consumed per hour was approximately 30 tons; for the entire voyage, 4000 tons, and per horse-power per hour, 1.5 pounds, a very economical rate.

The Open Shop in Alabama.—BIRMINGHAM, ALA., August 10, 1904.—The leading iron interests posted notices at mines that miners were needed and operations would be resumed to-day regardless of whether miners were union or nonunion men. It is too early to state results. The schedule of wages offered runs about 5 cents less than last year. The miners as a rule will decline the offer, and it looks as if the contention will last for several weeks. The operators are declining to officially recognize the union and are simply seeking to obtain labor to run their mines. Where circumstances warrant evictions will follow the advent of fresh labor, and trouble will begin. So far everything has been orderly and quiet, but the strained condition existing has given a black eye to business. The iron market is firm on the basis of \$9.50 for No. 2 Foundry, but the business is not great. There is not much disposition to take on new business. The strike and its results are the objects of interest, and so far the end is purely speculative. Each side has been considerate of the opposition thus far and both are standing pat. Deputies are being secured to go to the mines to preserve order, which shows existence of apprehension.

A new pumping plant recently installed in Shanghai consists of a pair of compound horizontal pumping engines fitted with Corliss valve gear, the steam cylinders being 32 and 52 inches in diameter, with a 48-inch stroke. The pumps are double acting, 20 inches in diameter by 48-inch stroke, and are driven direct by tail rods extended through the back covers of the steam cylinders. The duty of the pumps, at the service rate of 20 revolutions per minute, and with a steam pressure of 80 pounds per square inch, is to lift, in 24 hours, 60,000,000 gallons of water, against a head of 141 feet.

Three submarine vessels of an entirely new type have been laid down simultaneously at Cherbourg, and are to be named "Emeraude," "Opale" and "Rubis." As is the case with the boats of the "Narval" class, they will have double hulls. The length of each will be 148 feet; the beam, 13.1 feet, and the displacement, 600 tons. A speed at the surface of 12 knots is to be obtained by machinery of 600 horse-power, driven by a benzine or other internal combustion engine. When submerged, the machinery will be actuated by an electric motor, driven by accumulators. It is reported that each boat will have twin screws and six torpedo tubes.

The Brown-Corliss Engine Company, Corliss, Wis., has just shipped a 3000 horse-power cross compound rolling mill engine to the Lorain Steel Company, Lorain, Ohio. The Brown-Corliss Company manufactures heavy duty Corliss engines, both vertical and horizontal, as well as hoisting machinery, compressors, general rolling mill work, &c.

The street railway lines of Greater New York carried over 1,000,000,000 passengers during the year ending February 29 last, the exact figures being 1,036,834,773. This is the first time that the billion mark has been reached. The increase over the previous year was about 65,000,000, or 6½ per cent. About two-thirds of the passengers were carried in the Borough of Manhattan, and one-third in Brooklyn. The increase in traffic in Manhattan was almost entirely on the elevated railways, the traffic on the surface lines being about stationary.

HARDWARE.

A MERICAN exports to Japan and Russia for April, May and June, 1904, show a marked increase over the corresponding months of 1903. The total exports for these three months of 1904 to the two countries were in round numbers \$14,460,000, as compared with \$10,560,000 in 1903. This was an increase of 37 per cent., and figures already in hand for the month of July promise to make the percentage of growth even greater. This is an excellent condition of affairs, considered in its influence on the present status of American industries and products, but unfortunately it does not indicate a normal growth, as an analysis of what the trade consists of easily demonstrates. It looks very much as if both Japan and Russia have fallen off very materially in the consumption of American manufactured goods and raw materials for the purposes that go with times of peace, and have gained only in materials that must be classed as contraband of war. The item of surgical supplies and medical supplies alone bears out this statement, for in the three months in question the United States has shipped to Japan and Russia about \$4,500,000 of these supplies, and presumably most of them are for the warring armies. It will be noticed that this figure is greater than the \$3,900,000 which is the growth of the entire exports from 1903 to 1904. Grain, flour, machinery, mules, chemicals used in the manufacture of smokeless powder and other explosives, railway supplies, portable electrical appliances, such as telephone and telegraph instruments, firearms to a limited extent, all are for use to a greater or less percentage for the purposes of war. Taken altogether, it looks as if the commerce of peace has suffered materially, while the commerce of war has prospered. The trouble will come with the end of the war and before then, when the fighting nations shall have sufficiently stocked their supply depots.

As a means of comparison the report of the United States Consul at Chemnitz on Russian imports from the German frontier is significant. The United States stood third in volume of its Russian exports for the year 1903, and in the three years ending with 1903 the volume of American goods shipped over the German frontier had doubled. It is safe to presume that American trade with Russia increased correspondingly from other points of entry, in the Baltic, Black Sea and the Pacific ports. And this increase was in times of peace and consisted of cotton, machinery and other metal lines, and the various other goods needed by the people rather than by the army and navy. At the present time American exporters are worried over the action of the shippers of the Pacific Coast in refusing all freights for Japanese ports. It is not likely, however, that so rigorous a stand will be maintained, for some way must be found to get over the danger of capture by Russian ships of war and commerce destroyers. The trouble is with the sweeping classification of munitions of war by the Russian Government, which includes pretty much everything that is going to Japan at the present time, and Government influence may cause a modification of the Russian idea of the meaning of contraband.

The enterprise of the Northwestern Commercial Company in sending the big steamship "Victoria" on a long tour of Pacific ports, equipped as a floating exposition of American manufactures, will be the greatest thing of the kind ever attempted. The ship will sail from Seattle November 15, with a long itinerary of Pacific ports, including those of the South American coast, Hawaii, Aus-

tralia, New Zealand and Eastern Asia, the voyage to occupy six months. Only 100 exhibits will be taken, although there are accommodations for a greater number of first-class passengers. Each exhibit will have from 100 to 500 feet of space for exposition purposes, as well as space for 5 tons of cargo. A number of well-known manufacturers have already engaged accommodations for exhibits, including a number in metal lines, which will doubtless be increased. An effort will be made to secure the co-operation of the United States consular service in advertising the coming of the exposition. Ports out of the usual regular lines of steamship traffic will be given particular attention. While this is a private venture, yet if properly directed and if the manufactured lines shown are high class and representative, it will do certain good in bringing American products into comparison with those of other nations, and where there is the opportunity for comparison it is safe to presume that the manufacturers of the United States will be no losers.

Condition of Trade.

Current business, as usual in August, is of a perfunctory and drifting character. There seems to be no special complaint, and little doubt is expressed of a fairly good autumn trade, some attributing the temporary slowness in certain sections to the absence of many who are visiting the St. Louis Exposition. In the main, prices are well maintained, although some yielding is observed in such goods as Sledges and Heavy Hammers, owing to the dissolution of trade agreements, and there is also a weakness in Picks and Mattocks, Fencing and some kinds of Shears. Jobbers continue to supply their wants moderately, at the same time often sending rush orders by telegraph and otherwise, to be followed by tracer, thus indicating that current or pressing orders could not be executed from stock. Collections generally are said to be excellent, showing an abundance of money in circulation. Many houses are discounting their bills who years ago were likely to avail themselves of extensions, it being the experience of leading manufacturers and jobbers that more advantage is continually being taken by their customers of the opportunity for cash discounts than ever before. Stocks have been closely trimmed, and the trade as a whole seems to have its affairs well in hand. The South, while it has not heretofore possessed the purchasing power of the East and West, is in an exceptionally prosperous condition, various manufacturers referring to that territory as appreciably helping them out at present.

Chicago.

There is little new to report in the Hardware situation in addition to the somewhat detailed epitome of conditions as printed in our last week's issue. The tendency shows a healthful improvement from week to week. As indicating that the local demand is by no means bad, the prices received at the auction of J. L. Perkins & Co.'s bankrupt stock of Black and Galvanized Sheets, Tin Plate and Tinners' and Metal Workers' Tools and Supplies closely approximated the regular jobbing prices. In some cases, as, for instance, in Black Sheets and Building Paper, the impression prevails that bidders paid more than they could have bought the same materials for at the mills. Galvanized Sheets were bid up to almost the present mill prices. Tinners' and Metal Workers' Tools and Specialties went for a song, as bidding was not at all active in these lines. Nails and Wire products are still sold at \$1 to \$2 below association figures, though the demand is stated to be improving and prices are hardening a little. A large Chicago jobber states that at no time in the long career of his firm has he had at this time of the year as full order books as he now has. This business comes from all over the West and Southwest, evenly

distributed as to commodities, and fairly so geographically. A pronounced improvement is felt in the demand from the spring wheat regions of the Dakotas, Minnesota and Iowa, and equally so in the corn belt. The Hardware for the 12-story Ryerson office building was placed with Orr & Lockett Hardware Company this week. The amount of the contract was not announced. Six or eight other large buildings are approaching a point when Hardware must be placed within a very short time. Builders' Hardware in general is in better demand, both in city and country. The call for Axes is stated to be greater than it has been for a number of years, because the successful advance in prices on the part of the Axe makers demonstrates the possibility of another advance, and dealers are desirous of covering.

NOTES ON PRICES.

Wire Nails.—The condition of the market remains unchanged, with the usual light summer demand. Concessions of 5 to 10 cents per keg from quotations, according to the buyer and desirability of order, are quite general. Regular quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

Jobbers, carload lots.....	\$1.90
Retailers, carload lots.....	1.95
Retailers, less than carload lots.....	2.05

New York.—Business is more active for small lots from store than was anticipated in view of the threatened strike or lockout in the local building trades. Quotations are as follows: Single carloads, \$2; small lots from store, \$2.05 to \$2.10.

Chicago, by Telegraph.—The published prices of the leading producer are still being shaded 5 to 10 cents per keg. Business is understood to be improving somewhat. Official prices are as follows, f.o.b. Chicago: Jobbers, carload lots, \$2.05; retailers, car lots, \$2.10; retailers, less than car lots, \$2.20, though these prices are shaded from 5 to 10 cents per keg. Coated Nails are firm at quoted prices of \$1.60 to \$1.65 per keg to dealers or large consumers, delivered, Chicago.

Pittsburgh.—At a meeting of the Pittsburgh Steel Company, the Norton Iron Works and the Alabama Steel & Wire Company, at which a representative of the leading interest was present, it was decided to resist making any further concession from the regular price than that which has recently been current. According to the understanding of the mills, this bottom price is to apply strictly to regular large jobbers. The price remains based on Pittsburgh, but some rearrangement of delivered prices has been made, especially as regards points in the West and Southwest. While the official price thus remains at \$1.90, Pittsburgh, we quote as follows: In carload and larger lots to jobbers, \$1.80 to \$1.85; carload lots to retailers, \$1.90; less than carload lots to jobbers, \$1.85; less than carload lots to retailers, \$1.95.

Cut Nails.—No meeting of the Cut Nail Association is expected to be held during the month of August. It is understood that a meeting is scheduled for the early part of September, probably the 8th. Shading of 5 to 10 cents per keg is quite general. Regular quotations are as follows for Steel and Iron Nails, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

	Base.
Jobbers, carload lots.....	\$1.75
Jobbers, less than carloads.....	1.80
Retailers, less than carloads.....	1.90

New York.—The demand for Cut Nails from store keeps up to the usual proportion, compared with Wire Nails. Quotations are as follows: Carloads on dock, \$1.89; less than carloads on dock, \$1.94; small lots from store, \$1.90 to \$1.95.

Chicago, by Telegraph.—Nothing new has developed in the Cut Nail situation here. Prices continue to range from \$1.80 to \$1.85, Chicago, in car lots, with 5 cents advance for smaller lots.

Pittsburgh.—The shading which has been going on in Steel Cut Nails for some time has extended to Iron Cut Nails, and carloads of either are going at 5 cents under

the official price, while on an attractive order 10 cents is a possibility. The official price remains at \$1.75, base, carload lots.

Barb Wire.—The demand continues comparatively light and concessions of 5 to 10 cents per hundred are quite general. Official quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

	Painted.	Galv.
Jobbers, carload lots.....	\$2.20	\$2.50
Retailers, carload lots.....	2.25	2.55
Retailers, less than carload lots.....	2.35	2.65

Chicago, by Telegraph.—Official prices are still held as follows: Car lots to jobbers, Painted Wire, \$2.35; Galvanized, \$2.65. To retailers, car lots, Painted, \$2.40; Galvanized, \$2.70. Retailers less than car lots, Painted, \$2.50; Galvanized, \$2.80. Staples to jobbers, \$2.25 for Plain; \$2.60 for Galvanized. Staples to retailers, 5 cents higher. From 5 to 10 cents lower than official prices is quite general.

Pittsburgh.—The shading of official prices continues as previously quoted in this report, actual going rates being as follows, f.o.b. Pittsburgh, terms 60 days, or 2 per cent. discount for cash in 10 days:

	Painted.	Galv.
Jobbers, carloads.....	\$2.10	\$2.40
Retailers, carloads.....	2.15	2.45
Less than carloads.....	2.25	2.55

Smooth Fence Wire.—The general shading of regular quotations 5 to 10 cents per hundred pounds, together with the probability of a firmer market as the season advances, may act as a stimulus to demand in the immediate future. Official quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

Jobbers, carloads.....	\$1.80
Retailers, carloads.....	1.85
Less than carloads.....	1.95

The above prices are for base numbers, 6 to 9. The other numbers of Plain and Galvanized Wire take the usual advances, as follows:

	6 to 9	10	11	12	12½	13	14	15	16
Annealed....Base.	\$0.05	.10	.15	.25	.35	.45	.55		
Galvanized....	\$0.30	.35	.40	.45	.55	.65	1.05	1.15	

Chicago, by Telegraph.—While dull, this market is not more so than is usual at this time of year, and the 5 and 10 cent cuts in prices are to be expected under prevailing conditions. Official prices are unchanged, as follows, f.o.b. Chicago: Smooth Fence Wire, Nos. 6 to 9, \$1.95 per 100 pounds, in carload lots to jobbers; \$2 per 100 pounds to retailers, and \$2.10 in less than car lots. These prices are being shaded 5 to 10 cents.

Pittsburgh.—Some fall demand is appearing, and the closer adjustment of prices to the market will likely stimulate purchases. We quote as follows, f.o.b. Pittsburgh, terms 60 days, or 2 per cent. discount for cash in 10 days: Plain Wire, \$1.70, base, for Nos. 6 to 9, in carloads to jobbers, and \$1.85 to \$1.90 in small lots to retailers. Galvanized, 30 cents extra for Nos. 6 to 14.

Sheet Zinc.—An advance was made in the price of Sheet Zinc under date of August 4, by Matthiessen & Hegeler Zinc Company, La Salle, Ill., the quotation now being \$6.10 per 100 pounds in 600-pound casks, f.o.b. La Salle, with the usual discounts.

Rope.—Current demand is somewhat light, buyers providing only for immediate requirements and carrying light stocks. Manufacturers are shipping goods on contract orders, which will help to make a creditable showing for the month. Quotations on the basis of 7-16-inch diameter and larger are about as follows: Pure Manila, 11½ cents per pound; other grades of Manila, 10¼ to 11 cents, according to quality; pure Sisal, 9 cents; mixed Sisal, 7½ cents.

Glass.—From the West reports are to the effect that the demand has improved materially since the advance in price was made by the jobbers. There appears to be a shortage of popular sizes of Window Glass, and it is not probable that new Glass will be on the market before October, or possibly later.

Oils.—*Linseed Oil.*—Conditions remain unchanged, the demand continuing light and prices firm. Quotations are

as follows: City Raw, in lots of five barrels or more, 45 cents per gallon; in lots of less than five barrels, 46 cents per gallon; State and Western Raw, 43 to 44 cents per gallon. Boiled Oil, the usual 2 cents advance per gallon over Raw.

Spirits Turpentine.—The difference in price between Oil barrels and machine made barrels has been increased from $\frac{1}{2}$ to $\frac{3}{4}$ cent per gallon. The cause of the change was the accumulation of Oil barrels, as buyers refused to buy at the $\frac{1}{2}$ cent difference, so that the margin was increased $\frac{1}{4}$ cent. It is thought by some in the trade that after the holdings of Oil barrels are reduced a return to the $\frac{1}{2}$ cent difference is a possibility. The market is dull but firm. Quotations in this city, according to quantity, are as follows: Oil barrels, $55\frac{1}{2}$ to 56 cents; machine made barrels, $56\frac{1}{4}$ to $56\frac{3}{4}$ cents per gallon.

HIBBARD, SPENCER, BARTLETT & CO.'S FIRE PROTECTION SERVICE.

THE development of an efficient private fire department is a matter of such importance to manufacturers and large merchants that many of our readers will doubtless be interested in a description of the system in vogue at the main store of Hibbard, Spencer, Bartlett & Co., Chicago, in which every detail has been worked out to perfection. The main store of this firm at State street and the Chicago River consists of a ten-story fire proof building, each floor of which, including the basement, is divided into three separate rooms by means of fire walls. This makes the building in effect 33 different fire proof warehouses. In each of these 33 divisions is a fire alarm box connected with an annunciator, centrally located on each floor, which indicates the floor and section of the floor from which an alarm is sent.

When an alarm of fire is given the members of the fire department on that floor immediately drop their work and rush to the annunciator, on which they read the location of the fire. If it is on their own floor they seize their apparatus, consisting of Fire Extinguishers, Water Buckets, Axes, &c., and rush to the fire, and if it is on a different floor they remain stationed near the annunciator to wait for a further signal. In other words, the department on each floor is first depended upon to put out the fire, but if it seems to be of sufficient importance the fire chief summons additional companies, two responding to each alarm, until the entire brigade is present. All of the openings through the division walls of the building are guarded by double iron self closing vault doors, but while the automatic device operating these doors is counted as reliable absolute dependence is not placed upon it. A number of men known as door men on each floor have for their duty the closing of the fire doors between compartments and of wire glass fire windows in case the fire is on the outside and threatens to come in. Another member of the staff on the lowest floor has for his first duty the adjustment of the revolving door at the street entrance to the building, so that immediate egress is offered to the employees. Still another member of the force is instructed to send in a fire alarm to the watch service company, who immediately notifies the city department. To maintain the efficiency of the brigade, drills are held at intervals of not more than two weeks.

The force consists of 175 men, including a brigade chief, an assistant chief and 11 companies. Each company has its captain, its Extinguisher men, its Bucket men, its Axe men and four door men. More than 300 fire Pails are stationed throughout the building, and the captain of the company on each floor is required to submit a report each week, indicating that he has assured himself that all Pails on his floor have been freshly filled, that there is no foreign inflammable or combustible material present on the floor, and that the alarm and annunciators work properly. Sixty-five Chemical Extinguishers are distributed throughout the building, 35 alarm boxes and 11 annunciators. These annunciators, which were made by Kohler Brothers, are so arranged that by turning a switch the alarm will be sent to only one floor or to any given floors arranged for. This is done at an instant's notice by means of switches.

The writer of this article was given an exhibition test under rather trying circumstances, as the alarm was rung on the sixth floor when an excursion steamer was passing down the river within a few feet of the building, with its steam calliope shrieking at full blast. Notwithstanding this, and the fact that the men had had no previous warning, the company from that floor arrived at the scene of the supposed fire in less than 15 seconds from the time the alarm was turned in, and 30 seconds after a second alarm was turned in companies from floors above and below had arrived, and in a total of 80 seconds the companies from five floors were on hand, the members carrying their Extinguishers, Buckets or Axes as required. And throughout the building every fire door was closed, the front door was opened, windows closed and the proper official was just prevented from sending an alarm to the city department by a telephone message.

As stated before, the building is fire proof. It is of steel construction, with brick walls and tile floors and partitions; armored self closing fire doors with fusible links; wire glass windows that close automatically when links are fused, to protect the building from an exposure to the east; self closing elevator doors with fusible links; iron staircases guarded by steel armored doors with springs that keep them automatically closed. A feature about the building not usual in such construction is the fact that water turned on the floors, as, for instance, during a fire, instead of standing there and damaging the goods on the floor below, drains off to the four sides into a depression or channel between the last board and the brick wall and runs out through slits in the wall.

The men of the fire brigade have been drilled to a high degree of efficiency by W. B. Widner, the brigade chief, who was a captain in the United States Volunteer Army in the Philippines. J. H. McCartney is assistant chief.

REQUESTS FOR CATALOGUES, &c.

The trade are given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations, &c., relating to general lines of goods.

REQUESTS for catalogues, price-lists, quotations, &c., have been received from the following houses:

FROM H. W. SHEELER, Red Lion, Pa., who desires copies of catalogues and price-lists pertaining to Hardware and related lines. Mr. Sheeler is putting up a new building, which he expects to occupy by October 1.

FROM DOROTHY & SPICKNALL, Spencer, Neb., who have succeeded M. A. McCafferty in the general Hardware business.

FROM THE OMOHUNDRO HARDWARE & FURNITURE COMPANY, Whitesboro, Texas, which has been incorporated, with a capital of \$10,000.

FROM A. H. BOLES, Drakesville, Iowa, who has purchased Wm. Ireland's Hardware, Stove, Implement and Sporting Goods business. Mr. Boles will soon occupy a new storeroom, 22 x 90 feet.

FROM FINLEY & SWAN, Oolagah, I. T., successors to J. W. Finley & Co. in Shelf Hardware, Implements, Buggies, Wagons, Harness, &c.

FROM THE PAINTSVILLE HARDWARE COMPANY, Paintsville, Ky., which has just opened up in Hardware, Stoves, Farm Implements, Tinware, Wagons and Buggies.

FROM ELLIS & SETTERBERG, Lawrence, Kan., who have succeeded W. E. Penchard in Shelf Hardware, Furnaces and general sheet metal work.

FROM THE ASHLAND HARDWARE COMPANY, Ashland, Ore., which has been recently organized.

FROM KEYTESVILLE LUMBER COMPANY, Keytesville, Mo., successor to the Hardware and lumber business formerly conducted by W. W. Hancock.

Michigan Retail Hardware Dealers' Association.

THE tenth annual convention of the Michigan Retail Hardware Dealers' Association opened at the Hotel Pantlind, Grand Rapids, this (Wednesday) morning at 11 o'clock, with a preliminary session, which was largely devoted to routine business, such as reading of the minutes, appointment of committees, reception of members and payment of dues. John Popp of Saginaw, the president, called the meeting to order, and A. J. Scott of Marine City, secretary, occupied his official station. About 125 members were in attendance.

The following committees were appointed:

CREDENTIALS: A. Harshaw, Del Rey; Henry Stadt, Grand Rapids; M. A. Benson, Saranac.

CONSTITUTION AND BY-LAWS: E. J. Morgan, Coldwater; B. C. Wattles, Battle Creek; Arthur Schoenberg, Saginaw.

QUESTION BOX: Frank Mulholland, Pottsville; J. G. Patterson, Detroit; C. S. Judson, Grand Rapids.

NOMINATIONS: H. C. Minnie, Grand Rapids; F. Brockett, Battle Creek; H. C. Weber, Detroit.

RESOLUTIONS: O. H. Gale, Albion; Chas. D. Allen, Grand Rapids; Geo. Towner, Muskegon.

SERGEANT-AT-ARMS: C. E. De Clemens, Detroit.

Upward of 20 new members were enrolled during and previous to this session.

The first general session convened at 2 o'clock. The convention was welcomed to the city by the Mayor, his address being replied to by the president.

The largest number of exhibitors ever attending a convention of the association occupied nearly all the available room on two floors with exhibits of exceptional interest.

In the following pages we present a number of addresses to be delivered at the convention.

PRESIDENT'S ADDRESS.

BY JOHN POPP, SAGINAW, MICH.

I greet you to-day at this our tenth annual convention, and it is a pleasure for me to say, upon looking over the representative Hardware dealers throughout the State, that our membership has increased, perhaps not to the extent that we could wish and had reasons to expect, but, compared with other States, our ratio of increase has been such that we see no reason for discouragement.

It is not always well to review the past, but in this case I must, for the reason, I am pleased to say, that I am one of the charter members of the Michigan Hardware Association since its organization, and on looking over this gathering to-day I am pleased to see before me a majority of the organizers, still active and enthusiastic members. There is due these gentlemen a credit which shall never be forgotten, for, through the combined work of associations, the Hardware business to-day is on a higher basis than heretofore, and I do personally believe that if there had not been association protection the catalogue houses would be doing one-half of all the Hardware business that is being done in Michigan to-day.

You know in union there is strength, so let us, each and every member, take hold and lift and not stop until we have secured every retail Hardwareman in Michigan as a member of the association. We have in round numbers 1700 Hardware dealers in Michigan. Think for a moment, gentlemen, of the undeveloped power within our ranks that only awaits the magic touch that will bring us to a full realization of our strength.

AN AGE OF ORGANIZATION.

If any dealer is not satisfied with existing Hardware conditions, let me tell him there is a remedy and that remedy's name is organization. This is an age of organization; the jobbers, the manufacturers, the catalogue houses, and in many localities even our customers, are organized. Can we successfully combat single handed this array of organization? A great deal has been accomplished along association lines, and yet I am sure it is only in its earliest infancy and that the next two or three years will witness a great increase in membership and general interest in association work.

BENEFITS SECURED.

Here are your lien laws, your garnishee laws, and one of the greatest dangers that threatened the retail interest in this country was the parcels post movement, fattered by the catalogue and mail order houses. You will all agree that if it had not been for the good work of the Hardware associations throughout the United States the catalogue houses would be distributing a parcel weighing 50 pounds

to a farmer's house for 15 cents. In other words, our mail cars would be turned into freight service cars; but as it stands to-day, I think this will not occur in the next generation. When it came up before Congress the catalogue houses found out that there were other business men in the field besides themselves when they ran up against the different Hardware associations throughout the United States.

And while we are talking about benefits, here is the simplest of all, and that is our insurance protection. That alone will save you many times the cost of belonging to this association, besides all the other benefits I have already mentioned.

SELLING TO CONSUMERS.

One of the greatest evils that has been overcome to a great extent is that of manufacturers and jobbers selling direct to the consumers. The jobbers to-day are looking after the merchants and the merchants after the retail trade. This makes it pleasanter for both jobber and retailer.

Now, brother Hardwaremen, begin to wake up and do not talk so much about catalogue houses. If you will talk one-half as much about the Michigan Retail Hardware Deal-



JOHN POPP, President.

ers' Association as you do about these catalogue houses you will be making money, instead of advertising some one else. The more my competitor talks about me the more I am advertised.

SECRETARY'S REPORT.

BY A. J. SCOTT, MARINE CITY, MICH.

When I was called upon as secretary a year ago to give a report of the work accomplished during the preceding year I did so feeling that our efforts toward the accomplishment of those purposes for which this association was formed had been unusually successful during that period. In preparing my report this year I could not help but feel even more enthusiastic over the outlook. While I know that there is an endless amount of work still to be accomplished, I realize that we are approaching the solution of several problems which have been a thorn in the side of the retail Hardware trade in past years, and which would always remain as such if the Hardware dealers were forced to battle with them individually, instead of collectively through the association.

IF EVERY HARDWAREMAN OF THE STATE

could realize as thoroughly as do our officers and a large number of our members the place which the association occupies as a power for good, we would soon become so strong as an association that any grievances which we might have would be readily adjusted.

COMPLAINTS.

Now in regard to complaints. I take it that our friends in the manufacturing and jobbing business during the past year have been very good, for only six times since the last convention have complaints been filed with the secretary. Four of these complaints were settled in a manner entirely satisfactory to both parties. One against a stove company for allowing their goods to be quoted at a low rate by a catalogue house has not been definitely settled, but I believe

that, in the light of recent events, we will be able to show the manufacturer the necessity for withdrawing his goods or having them listed at higher prices. The sixth complaint, which was against certain jobbers for selling to contractors, was carefully gone into by a committee appointed by the president of the association, and while at the time I thought that the complaint was merely temporarily settled, we have not since heard from the complaining party, and I hope that the concessions made by both parties left no further cause for complaint.

SELLING GLASS TO CONTRACTORS.

In December, upon the request of one of our members, the Glass jobbers of this State were interviewed and requested to refrain from selling Glass to any but legitimate dealers. An agreement to this effect was signed by all the Glass jobbers and a provision inserted in the same that, provided it became necessary for any Glass jobber to sell direct to a contractor, he would give a commission on the sale to the retail Hardware dealer doing business in that territory or to his nearest customer. I have since heard of several sales of Glass that have been made to contractors, but in every case that has been brought to my attention some Hardware dealer has been given a commission, as agreed upon.

NATIONAL ASSOCIATION.

March 22, 23, 24, your secretary, with Vice-President F. M. Brockett and T. Frank Ireland, a member of your



A. J. SCOTT, Secretary.

Executive Committee, attended the fifth annual convention of the National Retail Hardware Dealers' Association in Indianapolis and found the affairs of our parent body in excellent shape. Various ways and means for increasing the interest in the various States affiliated with the National Association were discussed, and we derived a great deal of benefit from the experience of the other States represented.

PARCELS POST BILL.

The Parcels Post Bill was given a great deal of attention and as a result the fight was renewed in each State and no action was taken on the bill at the last session of Congress. The bill is not killed, however, and we will need to continue our efforts at the next session, as the Postal Progress League (in other words, the representatives of the mail order houses) will undoubtedly be on hand in their efforts to force this obnoxious piece of legislation down the throats of the people of the country.

HARDWARE MUTUAL INSURANCE.

The officers of the National Mutual Hardware Fire Insurance Company made a very favorable report at the above meeting in regard to the business of the company and stated that applications for policies were being received from every State in which there is a retail Hardware dealers' association.

CATALOGUE HOUSE COMPETITORS.

While the delegates will probably hear a more complete report of a meeting held at St. Louis, at which representatives from both the retail and wholesale Hardware associations were present, I cannot refrain from mentioning this meeting at the present time. It was undoubtedly one of the most important gatherings of Hardwaremen which has ever been held and was only made possible by the rapid increase in the strength of the organizations of dealers in this and other States.

Our past president, T. Frank Ireland of Belding, as a

member of the Executive Committee of the National Association, was in attendance at that meeting, and I believe will be with us to give the details of what was accomplished. A permanent committee was formed, comprised of members of both branches of the Hardware business, who will, in conjunction with the National and State retail and wholesale Hardware dealers' associations, carry out plans for offsetting the competition of catalogue houses, which has become such a vital question with so many retail Hardware dealers.

With the strength of the retailers and wholesalers combined it should not be long before the manufacturers realize that their interests do not lie with the catalogue house, and I understand that already several manufacturers of standard lines have taken steps which will result in their goods being entirely withdrawn from the next issues of these catalogues. This committee has a great deal of work cut out for it and it is going to require considerable assistance. It has the names of all the members of each State association and occasionally different members will receive communications asking them to comply with certain requests. It is unnecessary for me to give the details of these requests, but I would like to urge every one here to carry out the wishes of this committee when appealed to, for if we are careless about the matter it is unreasonable for us to expect any results. We have gotten to a point where we see a solution of the catalogue house problem in sight, and it devolves upon us to follow up this advantage in every way possible.

THE CATALOGUE HOUSE PROBLEM.

BY W. P. BOGARDUS, MT. VERNON, OHIO.

Last summer, when I had the pleasure of meeting you, the great subject of interest was the parcels post question. To-day the darkest cloud on the horizon of the retailer, and I may say the jobber as well, is the catalogue house question. During the last 15 years there has come up a class of men who have acted on the idea that the way for them to do business was to advertise through catalogues, scattered broadcast over the country, the goods they had for sale. And to attract the buyer's attention they used some of the best known brands of goods as baits, and offered them at a price so near cost that the retail trade would not meet the price. In this way they sought to

CREATE DOUBT IN THE MINDS OF THE BUYING PUBLIC

and arouse suspicion that home merchants were charging too much profit. These people freely admit that on equal terms they could not hope for trade as against the local merchant, but that they must rely on being able to undersell the retailer, or at least create the impression that they are doing so. During the early years of their existence they bought of the jobbers, but lately they are going to the manufacturers for their supplies, and their avowed intention is ultimately to own their own factories, or control the output of such factories as sell them goods, as in some cases they have already done.

BENEFIT OF THE FEW, INJURY OF THE MANY.

The fact that goods are quoted in the catalogues in a good many instances as low to the consumer as they are to the retail trade, and in some cases lower, would indicate that some retailers, and that is what catalogue houses are, are being favored to the injury of the balance. That manufacturers or jobbers should engage in this random way of selling goods has always been a surprise to me, especially when the low prices are given to people whose purchases will not exceed 20 per cent. of the manufacturer's output, and who come in direct competition with the manufacturer's customers who buy the 80 per cent. or balance of the manufacturer's product.

If the manufacturer were selling to a trade that was opening up new territory, if he was sending his goods to consumers who had heretofore never used them, there would be some justification for his course. But he is supplying goods for additional competition in territory that is already covered, and encouraging a competition that is bound to react on the manufacturer disastrously.

The manufacturer who sells to catalogue house and jobber at the same price is doing an unfair thing and discriminating against the jobber. He may say, as some do, that a catalogue house buys more than any one jobber, and further justify himself by saying that the catalogue house is better pay than 75 per cent. of the jobbers are, but he should remember that the jobber sells to the retail trade, who handle much the largest percentage of his output; that the jobbers are over 200 in number, while the catalogue houses are less than a score.

THERE IS AN INJUSTICE

to the largest per cent. of a manufacturer's trade when he takes the position that he will continue to supply the catalogue houses at the same price that he asks the jobber to pay, or when he says that the quantity shall regulate the price regardless of other conditions, and will give the catalogue house, that is but a large retail store, the same price that he gives the jobber, who must rely on the retail trade to

help him dispose of the goods he has bought of the manufacturer. It is absurd on the part of the manufacturer, who says that he will sell to all who come at such prices as he pleases, when he finds the jobber and retailer declining further to buy his goods, to cry "boycott" and seek to get sympathy from the public. The manufacturer who treats the subject of catalogue house competition as a matter of small moment and who is inclined to be amused at what the jobbers and retailers say, and contemptuously puts aside any consideration of their wishes, may wake up some day to the fact that there is more in the proposition than he had any idea of and that it vitally affects him as well as the jobber and retailer. There is a responsibility in this matter that he cannot escape, especially when he remembers that at least 80 per cent. of his goods must be sold through the legitimate channels of trade—the jobber and retailer. It becomes a rather serious question to the manufacturer how to dispose of the 80 per cent. of his goods if he disposes of the 20 per cent. at prices that make it unprofitable for the jobber to buy of him. There is an equity in business that cannot be disregarded. There is a fair dealing that all men demand. And the man who ignores these conditions and refuses to be bound by them loses public confidence and ultimately digs his own business grave.

CO-OPERATION.

Now comes the practical question for you and me to consider. How can we help on the work? I know of no better way than to join our State associations, so that we can stand united against the evils with which we are confronted and have to deal. As individuals we are helpless. United we have a strength that we little comprehend, which, if used wisely, will be for our mutual good. Shall not we, as retail Hardwaremen, stand united and present a solid front, so that some method may be devised to mitigate some of the evils under which we labor? It is up to us to take some action, that cannot be taken unless we stand shoulder to shoulder. A fair competition and no favors and a reasonable chance to live by our business is what we want and is what we will fight for.

THE RETAIL HARDWARE DEALER AS AN EDUCATOR.

BY J. H. WHITNEY, MERRILL, MICH.

In my opinion, the retail Hardware dealer has done as much, if not more, to bring mankind up to the high state of civilization it has attained than any other agency. All over this broad land of ours we have immense factories, with millions of dollars invested, employing thousands of skilled workmen, and producing articles for the use and benefit of mankind—factories producing Refrigerators, Sewing Machines, Cutlery, Tinware, Enamel Ware, Agricultural Implements, House Furnishings of improved type and labor saving appliances for the farm, workshop and the household. These immense institutions are employing master minds in bringing out new ideas and inventions, and expending large sums of money in perfecting and improving their products. The retail Hardware dealer is the distributor of the products of these great factories, and is the one who teaches the people how to use them, thereby educating them in the art of living in a modern way and consequently lessening the burdens of life. Every Hardware dealer and salesman should inform himself thoroughly in regard to articles that he sells, that he may intelligently instruct his customers as to the quality and use. As far as possible he should have a technical knowledge of the materials of which his wares are composed and be able to explain in a clear and intelligent manner the methods of their construction.

SPECIALTIES.

Every staple article commonly found in a Hardware store was at one time a specialty. Some master mind had conceived an idea, thought about it, dreamed about it, experimented and had finally brought out an article of merit—crude, perhaps, at first, but by patient industry perfected it and placed it on the market. It may have taken years of energy and patient toil to bring the article to perfection, but it remained for the retail Hardware dealer to bring the same into general use, for the benefit of all mankind. When the specialty man calls on you with his wares do not "turn him down," but thoroughly examine what he has, and if in your judgment the article has merit and you see where it might be useful to any of your customers, order a sample, familiarize yourself with its construction and use, and, before you realize it, your specialty will become a staple article with which you will not have any competition and upon which you may realize a living profit.

It is in this way that the retail Hardware dealer has become one of the greatest educators of the day. He has educated the farmer into the use of improved machinery on the farm, thereby doing away with the drudgery of farm life, and giving himself and family better opportunities of improving their minds in the attainment of useful knowledge. He has educated the housewife, so that instead of using the old fashioned fireplace of our grandparents, with its swinging crane and cumbersome Iron Pots and Kettles, her kitchen

now shines with the elegant planished Steel Range, with its shining nickel trimmings, handsome enough to grace a parlor.

CATALOGUE HOUSE COMPETITION.

At the present time it is up to the retail Hardware dealer to a certain extent to educate his customers to abstain from patronizing the catalogue houses. There is not any greater menace to the industrial welfare of the agricultural districts and smaller towns and villages than the present catalogue house competition. If the people are to be supplied by these agencies, it means, to a certain extent, the depopulation of the thousands of populous villages of our country, which have become beauty spots upon the face of the earth, and are filled with an intelligent and happy people who are engaged in the business of supplying the people the necessities and luxuries of life. It is our duty to impress upon the minds of our customers the importance of purchasing their goods at home.

The question arises as to how we can do this. In answer I would say: Talk quality; get the reputation of selling good goods, and keep it; get the reputation of buying goods for cash, and keep it; get the reputation of being a good collector, and keep it; get the reputation of being honest in your dealings with your customers, and keep it; get the reputation of taking an interest in the public affairs of the



J. H. WHITNEY.

community in which you live, and keep it, and last, but not least, provide yourself with the latest catalogues of your great competitors, keep them on your desk and familiarize yourself with their contents, and when your customers spring catalogue house prices, be ready to combat their argument, using for your defense the weapons of our enemies. Our customers need to be educated to the fact that the largest part of the stock in trade of our enemies is goods of an inferior quality, such as job lots, seconds and goods of imperfect manufacture. While the descriptions of them may be perfect, the prices asked for them are much more than they are worth. They should also be educated to the fact that if their trade is to be diverted from their home town to the larger cities we must necessarily abandon our occupations and homes, and many of us become their competitors as tillers of the soil.

Inasmuch as the catalogue houses are educating the people in the use of cheap, shoddy goods of an inferior quality, which in time will tend to lower the high state of civilization to which we have attained, let us take it upon ourselves to counteract their baneful influences and educate our people in the use of goods of a higher quality and of standard manufacture, and purchased from the home merchant, who is always ready to make every wrong right, and who, when called on, is always ready to respond to the demands of charity, pay his taxes, maintain the schools and highways, and support every possible enterprise which tends to improve the community.

OUR SOCIAL RELATIONS.

BY C. L. GLASGOW, NASHVILLE, MICH.

While I have not been actively associated with you in the past, I have not failed to notice the multiplication of opposing forces which attempt to divide again and again the volume of our trade, and with you have studied long and hard how their influence might be overcome. I am now president of a kindred organization, composed of the Car-

riage and implement dealers of this State, an association whose membership list contains many of the names of the members of this association, and whose task is the solution of the same great problems with which you have wrestled, and I have often thought a union of the two forces might prove of mutual benefit.

FRATERNITY.

I believe that one of the influences that brings us together, aside from the general desire to carry forward the great work in which we are engaged and so deeply interested, is the pleasure of meeting each other, of becoming better acquainted, enjoying the vigorous handshake, of getting away for a day or two from those surroundings which, though familiar and pleasant, yet are suggestive of hustle and worry, and laying aside for a time the consideration of those cares that weary us, enter into those relations which humanity naturally seeks in its escape from the more weighty things of life, not that we should let the pleasure of our social gatherings become of paramount importance, or that pride in the institution or the successful workings of the organization should become a more important factor in the lives of our members than the achievement of its purpose, but from these meetings we may get an inspiration that will send us home with a determination to exercise a more kindly feeling toward each other and make our fellow tradesmen and business competitors our personal friends.

While we gladly admit the refining and elevating influence of women in social life and the tendency their presence has to keep us watchful in our every speech and action, man's intercourse and association with men broaden him, increase his determination to do things, and build him up and strengthen him in those qualities that enable him better to overcome resistance and win success. Especially is this helpful when kindred spirits meet that find pleasure in devising new ways and means and discussing the trials and tribulations incident to the conduct of the same business enterprise.

We rejoice that the Hardware business occupies such a prominent position in the list of commercial pursuits that it is recognized as the great balance wheel in human industry, the sure barometer indicating depression or prosperity in business life; that in its conduct there are fewer failures than in most any other requiring as large an investment; that its successful operation demands and receives the attention of the very best executive ability in the commercial world, and it should be our ambition to continue this record, making the business still more honorable and successful by adding thereto the impress of our personality.

A MISTAKEN VIEW.

This cannot be easily done under twentieth century conditions if each dealer remains a lamp unto himself, deluded by the thought that his skillful management and superior ability challenges criticism and produces the very best results possible under all circumstances, and, therefore, any conference or exchange of ideas to which he might contribute would result in his loss and the others' gain, or, possibly not being in touch with the true spirit of the times, he feels that his competitor, be he of his own or nearby town, drinks at the fountain of his wisdom only to use the added knowledge against him, or awaits an opportunity to do him an injustice or injury, thus going on from day to day, and year to year, nursing those false conclusions that keep forever locked the truer and nobler emotions of his life, the full play of which brightens the eye, enlivens the step, throws a dash of color into the picture of life, clarifies and enlarges our vision, giving us truer conceptions of our duties and responsibilities, and enabling us to take a more accurate measurement of our fellow man and see in him many good traits worthy of commendation and that make him a good, companionable fellow.

SELF-SACRIFICE.

The larger number of us reside and do business in small cities or villages where the conventionalities of social life bring us often in contact, and we cannot afford for social or financial reasons to permit any but the best of feelings to obtain. To continue these conditions and maintain the high standard of our business often requires sacrifice on the part of the individual. We cannot, if we would, relieve ourselves of the responsibility of our personal influence, it cannot successfully be shifted, and each must bear his share, and therefore we should not participate in any action that would tend to lower public or private estimate. To what extent personality enters into success is often overlooked or underestimated. We may feel at times that trade is gained and held solely by the magnetism of price, and this feeling may be intensified when we see our business or social friends patronizing our less genial or close fistled competitor, but we may not always understand all the conditions.

We must not make our good fellowship our chief asset in trade. It will not take the place of quality, price or good display, but, other things being equal, humanity will seek those relations most congenial, and your efforts toward friendliness and an active interest in the social conditions surrounding you will net you a good return in pocket, mind

and heart, and make for you lasting friendships which may prove of inestimable value at some supreme moment in later life, and it is these memories and experiences that temper many of the adverse winds with which we have to contend, that renew our faith in God and humanity, keep the fires of hope alive, bringing to our rescue that warmth of heart and strength of mind that stimulate action and go far toward insuring success.

Let us always remember that it should be easier for us to lift up than pull down, that in our creation was embodied a power for good, and a misuse of it does not produce satisfactory results.

LET US BE CATHOLIC IN OUR VIEWS.

charitable in our criticisms and generous in our sacrifices, feeling thankful if thereby we have strengthened confidence or allayed suspicion in a brother dealer's mind to the extent that with faith in us he may not be misled by the statements of a customer whose personal gain through misrepresentation has dulled his conception of honesty and integrity.

I believe a great loss is sustained yearly by the sale of goods at a cut price, resulting from a lack of confidence in or a wrong impression of the intents and purposes of our competitor, and this can largely be avoided by closer social relations, begetting better business relations, eventually ending in a more thorough understanding and mutual agreements whereby our respective interests are protected.

Admitting the influence of good social relations upon our business and that as progressive business men we are desirous of bringing to its management every influence representing an element of strength, let us go a little further and recognize the fact that the world at large has a right to a portion of our time, enough at least in which to discharge those duties that belong to good citizenship, and we may well here put the general question, "What are we in this world for?" Certainly something besides making a success of a particular business that absorbs the ripest fruit of mind and body, and in return gives nothing but food and clothing. Are we here simply to wear these clothes and eat and sleep; be counted by the enumerator, work and pay taxes, buy and sell, and through the wise investment of the profits be denominated successful? If in these days of mental research and scientific investigation, of abounding prosperity and colossal fortune, all the munificent endowments with which we have been blessed are to be turned to personal account, then, indeed, have we fallen far short of living up to the full measure of our possibilities.

WE ARE HERE TO HELP AND BE HELPED.

Some are burdened and we must lift; some are sorrowful and we must sympathize; some are in want and we must minister; and through this all we can see the angel of Hope standing far up the mountain side of promise applauding and beckoning us forward, while Duty walks beside us to encourage and direct.

I cannot believe that cultivating good social relations, inspiring men to be more honorable and trustworthy, increasing their confidence in each other, will tend to weaken our mentality, or render us less able to grapple with and solve the great business problems that confront us; but this enriched experience, this broader and deeper education, this higher ideal of business life, will bring still greater honor to our business and prove us useful and worthy citizens of our respective communities, holding ourselves in readiness to accept any responsibility that business or society may impose, determined at all times to get from life the very richest blessings it has in store.

SOME POINTS WHICH CONTRIBUTE TO THE SUCCESSFUL RETAILING OF HARDWARE.

BY E. S. ROE, BUCHANAN, MICH.

To my notion one of the most important factors in retailing goods is cleanliness. "Cleanliness is next to Godliness." Comparatively few of us, perhaps, are Godly; but with a little effort exercised daily, and in many cases hourly, we can all be clean. To be neat and clean yourself, and keep your stock neat, clean and orderly, is a resource that is within the reach of every merchant; and to have your place of business open promptly and in shipshape and be ready to meet every prospective buyer with a smile will make a good start toward a day's business.

CHEERFULNESS.

Too much stress cannot be laid on cheerfulness, for it is "catching" and needs only a little good, free, open hearted optimism to put everybody around you in a good humor and in a mood to buy. If you have troubles (and we all have them) don't tell anybody about them and try to make them miserable; but if you have anything pleasant to offer tell it and you will live in a congenial atmosphere and your business will improve and increase, for every one enjoys looking into a pleasant, happy countenance.

Some might say that this is hard to do unless your disposition is sunny and of the right sort, but I will give it as my opinion, based on experience, that this disposition can be successfully cultivated and made easy, even by the dyspeptic

or the man with a torpid liver, if he will try hard enough and long enough and "put his soul into the work."

Get control of yourself first; get happy, or get so you can impress others with the idea that you are full of good cheer and ready to meet every difficulty with a smile, and as though you were aware that it was only another one of those incidents that go to make up a life, and in the end is all for the best.

KNOW YOUR BUSINESS.

To this cheerful disposition I would add a thorough understanding of the business. Not only know the name, cost and selling price of every article in the store, but so far as possible know how and for what it is used, so that you can show a customer the particular application of the article for the purpose in hand, and in this way make comparisons of utility and values, and make many sales and some customers that become a permanent resource to the business.

I always make it a point to keep posted not only on the varying conditions of the market, but also to know the weight of Sheet Iron, Zinc, Bar Iron; weight, length and strength of Rope, Cordage, Wire, &c.; to know the number of Nails to the pound, the weight of Staples needed for Barb Wire, Smooth Wire, Field Fence, Poultry Netting and many kindred things that an observing man can have at his tongue's end if he will pay close enough attention to his business day after day, and, as the Hebrew expresses it, "Sharge 'is mind mid ud."

It is a pleasure to me to make this fund of knowledge free to my friends and customers, very many of whom ask these questions, and I am glad to have them do it, because if there is any new work in prospect it puts me next to the proposition and in a better position to get the business than I would otherwise be.

If we are successful Hardware dealers, we in a measure are deputized by our friends and customers as their buyers, and as such we must study every need and purse, in order to please the varying notions, always selecting goods that have merit in proportion to their cost, and keep a good assortment and a reasonable quantity on hand and ready for delivery at a moment's notice. I do not advocate the idea of buying six months' stock ahead, but I do believe that it pays to keep enough goods on hand at all times to supply any ordinary demand that would be likely to be made upon you, and, above all, keep plenty of the staple sizes and kinds of goods that are everyday sellers. One of the surest signs of weakness on the part of a merchant is to be habitually "just out" of staple stock.

The size of the town and the surroundings, the size of a man's capital, and the breadth of his lines of goods should make it clear to a careful man about the proper amount of stock to carry; but it is my opinion that one of our commonest weaknesses is a disposition to buy too much, and allow our stocks to gradually increase from year to year, and in this way keep our profits tied up in merchandise, and often prevent our taking a pleasure trip that would repay us several times the cost, by giving a change and rest that every human being demands, to say nothing of the pleasure that we and our families might enjoy. So I say, Keep good assortments, buy often, but keep your stock down, and your bank account and promises to pay will be up.

PROFIT.

This is a point on which many of us would differ, but we will all agree that this important factor is the only thing that keeps us behind the counter or in the office from early morning till late at night six days out of the week, and sometimes seven, and this is the only reason why details annoy and make black hair gray. But we know that it costs about 10 per cent. to do business, and to this must be added 1 per cent. for bad debts, 2 per cent. for accidents and things unlooked for, and you find that about 13 per cent. is absorbed in marketing Hardware under ordinary conditions, and this must be paid before there is any actual profit in sight; so that on general principles 20 per cent. is as little as goods can be sold for and leave a fair return for the money and labor employed. If we can turn the stock three times in a year this would net about 20 per cent. on the investment, which, with risk of loss by fire and other ways, is plenty small enough.

COMPETITION.

The great diversity of lines handled in a Hardware store naturally puts us in competition with a great variety of businesses and to meet these different competitors correctly is a problem. Grocers and bazaar stores, perhaps, handle more goods in direct competition with the regular line of Hardware than any other class of trade, and while they handle cheap goods, as a rule, yet this country demands a certain percentage of cheap goods, and the only reason that a Hardware store does not get this class of trade is simply because, as a rule, it doesn't have the class of goods carried by its competitor in the cheaper lines. Butler Brothers issued a little pamphlet recently that was aimed directly at the catalogue houses, in which they give some pretty good pointers to a good many of us, especially those of us who class as old timers, and who have been accustomed to sell

nothing but goods that represent a high standard of quality. They think that the large business of the catalogue houses and the 99-cent stores, bazaars, &c., could be shared liberally with the legitimate Hardware stores, and at no extra expense to them, by simply putting in a line of the cheaper quality of goods and selling them for what they are worth, and for just what they are, and I believe they are right. They say that there is no legitimate reason why a man should pay any more for an article because he buys it from a Hardware store than he would if he bought it from a racket store, or a bazaar, and without the cheap article for comparison it is hard to show him the difference.

Now it appeals to me as perfectly rational that if we cater to this cheaper trade we not only increase our own business and profits, but we steal the thunder to quite an extent of the cheap stores and catalogue houses, and gradually stop this evil of sending away for supplies by giving them the same goods at the same prices at home, where exchanges and returns can be made without cost to any one. I noticed an article on this subject in the last issue of the "National Hardware Bulletin" that I think is perfectly correct under the title, "Meet the Price."

MAKE PROMISES GOOD.

It has been my policy for a good many years to make good every promise to a customer as to quality and all kinds of guarantees, and to meet and satisfy every grievance that a customer might have, either real or imaginary, for the good will of a customer is usually worth much more than the cost of keeping him in that frame of mind. I never haggle or chew the rag with a customer, but redeem every pledge freely and promptly, and make it appear to him that it is a pleasure to make him happy.

In conclusion, I might summarize, and say: Keep clean, keep your stock clean and orderly and properly displayed, know your business, and be prepared to meet all kinds of competition, and practice eternal vigilance, for we know that keeping everlastingly at it brings success.

AMONG THE HARDWARE TRADE.

E. B. Chambers has succeeded the Backus Mercantile Company, Malta, Mont., dealers in Shelf Hardware, Stoves, Tinware, Agricultural Implements, Paints, Furniture, &c.

J. W. Greene has disposed of his general Hardware, Stove and Implement business at Shawnee, O. T., to the Harry Mead Company, which has commenced the erection of a new three-story building, to which the stock will be removed on completion.

The entire stock of the Pittsburg Hardware Company, Pittsburg, Kan., has been purchased by C. G. Emerson, formerly treasurer of the Foundry Company of the same city. He will give his personal attention to the business, which will be continued at the present location.

Thompson & Skagen have succeeded J. Frederickson & Son in the Hardware and Farm Implement business at Brownsdale, Minn.

Mawhor & Gowdy, Tabor, Iowa, have disposed of their Harness business and will hereafter devote themselves to the sale of Hardware and Agricultural Implements.

Petheram & Leighton are successors to J. C. Petheram in the Hardware, Stove, Tinware and Sporting Goods business at Kanawha, Iowa.

O. K. Cochran has disposed of his general Hardware business at Anardarko, O. T., to F. S. Seward.

Day & Holt, Catskill, N. Y., dealers in Hardware, Iron and Steel, &c., have been succeeded by Day & Holt Company, a corporation. The officers of the company are Jeremiah Day, President; Frank J. Webb, vice-president; Samuel E. Holt, treasurer and manager, and Philip L. Walsh, secretary. This change marks the second transfer of ownership in the business during a period of 71 years, the first occurring in 1883, at which time Day & Holt purchased the establishment from the late John T. Mann, who had conducted the business for about 50 years. Mr. Mann succeeded Cooke & Atwater, who founded the business many years previously.

AUSTRALIAN NOTES

MELBOURNE, July 1, 1904.

FROM A SPECIAL CORRESPONDENT.

THE annual stock taking is upon us, and it is doubtful if, taking the trade as a whole, a slower month than the one just closed has ever eventuated to facilitate the overhaul. Yet with all the unmistakable dullness of trade, the general outlook is distinctly good. Rains have fallen where most needed, and given the spring weather and spring rains at their appointed season we shall have an assuredly good year in 1905. Good—that is, considering the fact that there is not much development going on in the country, and that our population to-day is certainly no more numerous than it was ten years ago.

The Commercial Travelers' Club, Melbourne, has secured a suite of rooms in premises adjoining the club for the convenience of travelers desirous of opening up their samples in this city. Melbourne is not too well supplied with decent sample rooms, and travelers have in the past frequently been compelled to open up in localities remote from those where their best customers were to be found. Consequently the new sample rooms of the Commercial Travelers' Club will prove a godsend to travelers and a source of added income to the Commercial Travelers' Association.

Webster & Co. of Brisbane, Queensland, and Peter Fleming & Sons of the same city, two of the best known Hardware houses "up north," have each been floated into limited companies, the first with a capital of £150,000, the second with a capital of £80,000. The flotations have been for private and family reasons.

The building trade throughout the Commonwealth continues fairly active, and American and English agents both report good business.

The mining industry shows strong signs of a revival, and good orders have been placed lately, especially in Wire Ropes, a line, by the way, which your good people in America leave almost absolutely in the hands of English makers.

Brass foundry trade is moderately good, and here again in such lines as Fenders and Fire Irons English makes have undisputed sway.

The most recent customs decisions, just gazetted, and affecting Hardware imports, are:

Rotary Diamond Glass Cutters, duty free, as tools of trade. Sparking Plugs, with or without porcelain, being part of a spark coil, 12½ per cent.

Oil Engines, when imported with motor omnibuses, being an integral part, 20 per cent.

Oil Traction Engines for farm use, duty free.

Rotary Knife Cleaning Machines, 12½ per cent.

Hawk-eye Power Hammers, 12½ per cent.

Aluminum Enamel Paint, 20 per cent., or 1 shilling 9 pence per gallon, whichever higher.

TRADE ITEMS.

WILLIAM G. VAN NESS has been elected a director of the Allerton-Clarke Company, 97 Chambers street, New York, to fill the vacancy caused by the death of Thomas W. Munroe, Mr. Van Ness also succeeding Mr. Munroe as secretary of the company. Mr. Van Ness has been connected with the house and its predecessors for the past 15 years.

THE Allen-Randall Company, successor to P. D. Randall & Co., Springfield, Mass., manufacturers of Bolt Clippers, Blacksmith's Tongs and Spécial Drop Forgings, has organized with sufficient capital for the purpose of largely increasing the manufacture and sale of the lines briefly referred to above. The new company announces that it will carry the most complete line of these goods yet offered to the trade. A new catalogue is in preparation.

THE fourth annual outing of the employees of F. E.

Myers & Brother, Ashland, Ohio, was held on Saturday, July 30, at Silver Lake, near Cleveland, and about 60 miles from Ashland. The hundreds of employees of the Pump and Hay Tool works and their families enjoyed the event to the limit, the weather being superb and the festivities unmarred by any disagreeable features. The occasion was a splendid illustration of the very cordial relations which exist between this company and its workmen.

FARWELL, OZMUN, KIRK & Co., St. Paul, Minn., issue a little pamphlet in which attention is called to their "Retail Dealers' Selling Price-List," which is used in connection with their General Hardware catalogue published a few months since. This price-list is intended to assist merchants in the sale of goods which they do not carry regularly in stock. The pamphlet contains numerous letters from well-known Hardware merchants in which the practical value of the price-list is commented upon.

C. K. HUTCHINS, who some months since organized the Western Wire Goods Company, Buffalo, N. Y., has discontinued his relations with the company and is no longer connected with it in any capacity. Mr. Hutchins hopes soon to be able to announce his re-entry into the same line of manufacture.

STOWELL MFG. & FOUNDRY COMPANY, South Milwaukee, Wis., has prepared a series of attractive exhibits for some of the State fairs which will be held during the next few weeks. The exhibits comprise a complete line of Hay Tools, Ajax Barn and Acme Parlor Door Hangers and Side Wall and Floor Registers. M. J. Evans will represent the company at the Illinois State fair, and also at the Milwaukee fair. John J. Dalton will look after the exhibits at the Minneapolis fair at Hamblin and the Des Moines, Iowa, fair. James H. Dosser will be at the Indianapolis, Ind., fair, and also at the Ohio State fair at Columbus. W. L. Bigelow will represent the company at the Michigan State fair at Pontiac, and also at the Western Michigan fair at Grand Rapids.

W. C. STEPHENS, Chicago manager for P. & F. Corbin, sails this week for a six weeks' combined business and pleasure trip in England, France and Germany.

THE ORR & LOCKETT HARDWARE COMPANY, Chicago, is making extensive improvements in its five-story store in Chicago, including the transformation of the basement story from a warehouse to a salesroom, and the removal of the main staircase from the front of the store to a point 50 feet further back, greatly adding to available floor space in the front of the main floor.

THE REDHEFFER HARDWARE COMPANY, Kansas City, Mo., has been incorporated with a capital stock of \$5000. The company succeeds the Redheffer Company in Shelf Hardware, Stove, Tinware, Agricultural Implement, Paint and Sporting Goods business.

EVART TOOL COMPANY Evart, Mich., has just issued a 48-page catalogue showing the complete line of Evart Lumbering Tools and Handles which it is manufacturing. This company was organized in April last, and its plant has been equipped with the latest improved machinery, built especially for the manufacture of this line. Mr. Gough, president of the company, who has charge of the mechanical part of the business, has had years of experience in the Lumbering Tool line and was formerly connected with the Belanger Tool Company of Evart. Geo. R. Tummonds, secretary, was for four years identified with the office department of the Champion Tool & Handle Works. The company's workmen are referred to as men of much experience, and special claims are made for the quality of the product.

LANDERS, FRARY & CLARK, New Britain, Conn., have an exceptionally attractive display at the World's Fair. The exhibit is located directly in front of the main entrance to the Varied Industries Building. The extent and variety of the Table Cutlery shown, the manner of display and the architectural beauty of the booth itself combine to make an exhibit which will be inspected by visitors with interest and profit.

TRADE WINNING METHODS.

This department is for the description of approved methods of carrying on and extending business, and a cordial invitation is given to merchants to co-operate in the effort to make it suggestive and of practical use to the trade.

DRESSING HARDWARE STORE WINDOWS.

THE lack of harmony in some hardware window displays can be frequently overcome by the use of color. Colored cloth of some kind should be used for draping the walls, roof and floor in such a manner as will give the appearance of softness. This cannot be attained by using the windows as they are. All windows are not built so that they can be dressed as shown in the accompanying illustration, but it is particularly desirable to have a flat background if possible. The background being the most noticeable part of the window and quickest to catch the eye of the passerby, should be given careful thought before commencing the

has furnished us, embodying maxims which it deems of importance in the conduct of the Hardware trade.

Store Arrangement and Conduct.

The first, last and entire motive in advertising is the getting of one's name and merchandise before the purchasing public. To do this much study must be given the arrangement of the store, the decorating of the show windows and the wording of newspaper advertising.

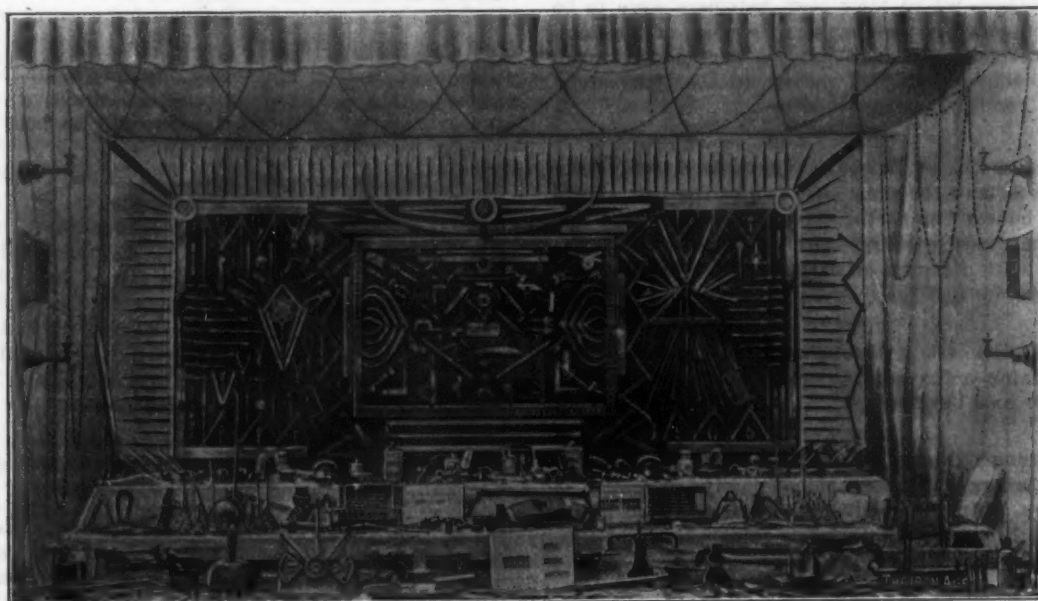
Make your store look like business; find time to keep your shelves, show cases and counters in order, if it takes overtime.

Change the arrangement of your show tables at least twice every week. Dust may accumulate, but don't let your customers see it.

Make up your minds that you will set the pace for your competitors, and get your clerks full of the same spirit, else the dark horse wins.

Keep up in the looks of your establishment the high standard of the Hardware business. Buy new show cases; don't get rusty.

Just as many people are looking for Hardware as are



Dressing Hardware Store Windows.

making up, that it may be attractive. One window dresser uses Atlantic Bunting exclusively for draping, with the exception of a square background, which should be of another color and material. The window illustrated was draped in white, with a Turkey red background, making a window which was pleasing to the eye. A window of this sort will wear a long time without becoming tiresome to the public. The floor was dressed in a series of steps to give the window the appearance of being dressed from the front glass backward and upward to the top. Plenty of light should be used, a good effect being produced by frosting the electric light globes. For the above advices as well as for the photograph from which the accompanying view of window was made, we are indebted to John E. Hardy, who is charged with the care of the show windows in the establishment of the Honeyman Hardware Company, Portland, Ore.

A NEW ENGLAND MERCHANT'S SUGGESTIONS AND MAXIMS.

A well-known Massachusetts Hardware house, doing a large and successful business, and with a reputation for progressive methods, has the following conspicuously posted in its office:

Buy the best goods; the original, not the imitation; leave the labels on; have what you pretend to have; ship what you sell, and remember that character is as necessary as capital in the Hardware business, and can be as easily lost.

We give below a series of suggestions which this house

looking for any other line of merchandise, and you can get your share of the business by push, honesty and attention to the wants of your customers.

If you do not have in stock what they want, get it for them. One of the highest compliments ever paid our concern was that if an article could not be found in our stock, or we could not show a cut or list of it, it could not be had.

Use your whole business energy to please your customers, to maintain the standard of quality in your merchandise, and to keep before the public the name of your concern.

Window Display.

The store windows are the most important factor in a concern's advertising. More sales may be attributed directly to this source than to any other. Thus it is important that special care should be taken in their arrangement.

Do not think that any amount of money spent in the betterment of your store windows is money thrown away—it is the best investment you ever made.

Make the trimming of your windows a matter of system; change the arrangement every week in the year, oftener if you can.

Put all the prices you can in your windows. Do not be afraid your competitor will see them—he is only one—there are thousands of others.

Use all the care, skill and thought of your best man in their arrangement; use attractive announcement cards; keep your glass clean, your signs polished.

Make your windows the parlors of your store, the place where you can show your best and most attractive goods.

Newspaper Advertising.

In your newspaper advertising the one essential thing is truthfulness; have exactly what you advertise to have; have your clerks know about what you are advertising.

If results do not come up to your expectations at once, keep it up; it is the continuous intelligent advertising that brings results.

Do not try to get too much into a small space; be satisfied with one article, but change your advertisements often, every day if you can.

Tell your story so people can understand it; tell a specific thing, tell it true, and it will pay.

Success in advertising is not often attained by accident; thought and care are as essential to best results as in any other part of the business.

Intelligent, persistent effort is the main factor in its achievement.

Use attractive headlines; have your space in the newspaper next to the reading matter, if possible, but always have it in the same place. People have no time to hunt for your advertisement.

Do not be satisfied with doing as well as some one else; do better if you can.

If you have ideas of your own as to the looks of your advertisement, have a talk about it with your printer, he will meet you half way.

A Final Word.

Do not try to do all the work about the store yourself; place a good share of the responsibility on the shoulders of your clerks.

They will take a greater interest in their work if a portion of the load is on their shoulders.

Have enough clerks, so that your customers are well taken care of; you can always find work for them to do.

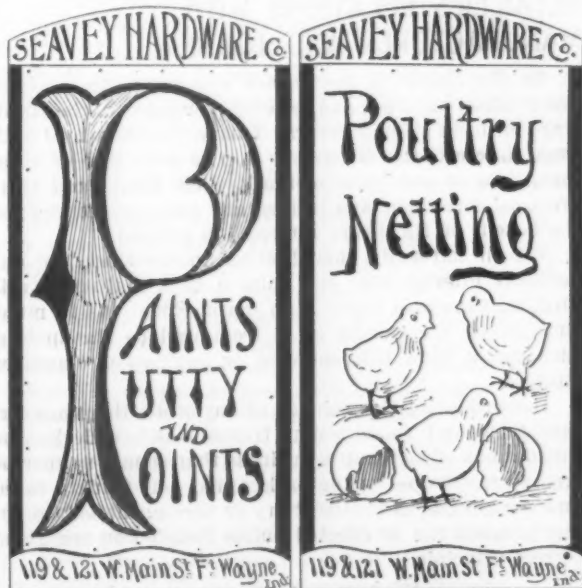
Give each clerk a certain part of the stock or work to look after, and hold him responsible.

Drop your work when you lock up your store at night; give your mind a rest from business cares. The next morning's work will go much more smoothly if you do this.

BULLETIN BOARD.

Seavey Hardware Company, Fort Wayne, Ind., employs to advantage a bulletin board, several illustrations of the use of which are given herewith. This board is set flat against the building, facing the street, and the

by on the sidewalk, but also by those in the street cars. The board is 28 x 52 inches in dimensions. Such sketches in color as are used are hand painted, and after the necessary wording has been added by their house artist the

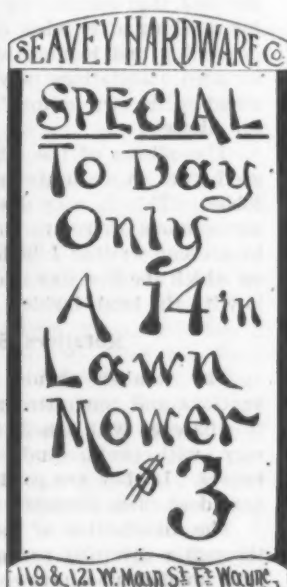


heavy paper on which the work is executed is tacked onto the board. Special sales are thus brought to the attention of the public as well as particular goods in which the company is desirous of interesting the people, and the board is regarded as a very effective and successful method of accomplishing the purpose for which it is intended.

UNITED STATES CONSUL GOTTSCHALK at Callao, Peru, reports that an apparently well-founded complaint has reached him from a prominent importing firm in Lima, that cargoes of Hardware, recently received from both England and the United States, have been so damaged by a peculiar oxidation as to be almost unsalable. In both cases the goods came via the Isthmus of Panama. The importers attribute this deterioration of the goods to disinfection of cargoes by means of sulphur fumes at the port of Guayaquil. In some cases the goods showed a very unsightly bluish or blackish stain, and in others were completely covered with a coat of red rust. The articles included Machetes, Steel Bits, Chains, &c. While it is thought probable that the above deterioration of merchandise was not due to sulphur disinfection in itself, but rather to the effect of the sulphur fumes upon goods which had already accumulated moisture upon the journey, the consul remarks that it would be well for American exporters, in packing for ports on the western coast of South America, during periods of quarantine, to have their packages, especially those containing Metal Goods, Hardware, &c., packed as nearly air and water tight as possible.

THE ROSS SUPPLY COMPANY, Greenville, Ohio, has purchased the plant of the Anderson Malleable Iron & Mfg. Works, Anderson, Ind., where it expects to continue the manufacture of Rex Wind Mills, Substructures, Tanks and Pumps and to do a general custom casting business, as well as jobbing Steam, Gas and Water Fittings. The company has increased its capital stock to \$100,000, in order to be in a position to handle the two plants. The general office will be at Greenville, Ohio, and the factory office at Anderson, Ind. The officers of the company are as follows: F. T. Conkling, president; J. P. Duffey, vice-president; George F. Taylor, treasurer and local manager of the Greenville plant, and J. H. A. Ross, secretary and general manager of both plants.

J. M. KILLIN, a well-known Hardware merchant of Pueblo, Col., was one of the few survivors of the disaster which befell the World's Fair flyer on the Denver & Rio Grande Railroad, near Eden, on the 7th inst. Mr. Killin had a remarkable experience, and owes his escape from death to his coolness, courage and strength as a swimmer.



announcements it carries are made with sufficient distinctness to be read and apprehended not only by passers-

THE CATALOGUE HOUSE QUESTION.

RETAILER'S RELATIONS WITH MANUFACTURER AND JOBBER.

To the Editor: I am neither a manufacturer, jobber nor retailer, but I am and have been engaged in the Hardware business about 25 years. I have therefore read with great interest the discussion in *The Iron Age* of catalogue houses and their methods, their faults and their proposed correction, and incidentally some suggestions for the benefit of Hardware interests in general.

We all, naturally, though often unconsciously, let our personal interest bias our opinion in a matter of this kind, and perhaps there is an unconscious bias in mine. But, as we are looking at it from various standpoints, each gets a little different view or impression, biased or straight.

In considering this subject, or any other, there are certain facts and fundamental truths which underlie the foundations of mercantile business that should neither be ignored nor forced to the background, but frankly faced and recognized. No satisfactory or permanent solution of any problem can be effected unless founded on truth and correct principle.

Evolution in Business.

Evolution is no longer a theory in political economy or in everyday business. Of this, no more striking evidence is needed than these very catalogue houses. We no longer hear the cry, so prevalent a year ago, "They must be driven out of business." These houses are the result of evolution in business. They are conducted on the most economical, most efficient, up to date plans and managed by kings in mercantile ability and intellect. They go after their object, and reach it by the most direct and shortest possible route. This is a fact which was at first a little obscure, but has come out clearly and is now seen by all. It seems to me that there are other facts which are not clear at this time, but which must come to light, and the sooner the better for all concerned.

Shattering an Ideal.

In the seductive statement, so often repeated, that "The ideal method for distribution of product is from manufacturer to jobber, from jobber to retailer and from retailer to consumer," there is a large measure of practical truth, but evolution and the catalogue houses have made this ideal utterly impracticable for universal realization. To this fact you called attention in an editorial a few weeks ago, in which you cited the case of a manufacturer placing a new appliance on the market, and gave conclusive reasons why it could not be done through the jobber. We will admit the evident truth that in the case of Screw Hooks, Tacks, Can Openers, Bull Rings, &c., the method to which we aspire is not only ideal and practical, but, in fact, the only method of distribution. We will include in this schedule 100 other items which the retailer does not buy in quantity to make a shipment from factory.

But by what logic can one take another step, and say, if this is true it must apply to everything sold by the retailer? Here is where we are misled. I want to say that between the example mentioned in your editorial and the admitted truth above there is a great field of variation. If one is the undisputed pasture of the jobber, in which the manufacturer must not roam, and the other is the ground on which the manufacturer may meet the retailer, free and unhampered, there is an expanse of prairie between in which the conflicting interests of manufacturer, jobber and retailer are all aggressive and beligerent, and must so continue until the dividing line is established and the fence erected.

To me it seems that absolutely the only practicable way to draw that line is the one I have indicated. When the retailer gives a traveling salesman for a jobber an order for miscellaneous shelf goods he is obtaining his supply of these goods in the only practical way, and the jobber in filling it is performing his legitimate, natural function. But when this same retailer wants any item in suffi-

cient quantity to make shipment from factory, or places his order in the spring for Poultry Netting, Steel Goods, Freezers, &c., or in the fall for Sheet Iron, Hods, Pipe, &c., which, for himself or in co-operation with one or more of his neighbors, is sufficient to make a carload shipment, he becomes a wholesale buyer, although he is not a jobber.

Why Is the Jobber Necessary

In this transaction? We know how the jobber, in self interest, answers this in his plausible and able way, but strip his answer of everything but the naked truth and it is not convincing. The stubborn fact remains that this retailer must meet the competition not only of the catalogue house in a distant city, but of the department store in his own town, of his neighbor in the retail Hardware business, who carries a larger stock and is perhaps buying many of his goods from the manufacturer direct, and perhaps also of some small jobber who enters into competition with him in the retail business. Let us face the truth. This retailer cannot pay a living profit to the jobber and himself and successfully meet the competition mentioned. All unnecessary go-betweens must be squeezed out or the business go to the catalogue house. This may not be a pleasant truth to acknowledge, but it is evident and might as well be recognized.

Perhaps no one will find fault with the jobber for reaching after everything in sight. Probably if we were in his place we would do the same. But really, after admitting his legitimate field, why should the retailer pay toll to him all along the line? The day for this has passed. Too many of the retailers have reached independence. The regulation of our own business is a comparatively easy task to that of regulating the business of others.

Classifying the Trade.

The attempts of committees from the National Jobbing Association in meeting with committees from manufacturers in nearly all lines, to classify the trade, and say this small jobber may buy 20 per cent. less than that large retailer, who buys more of these goods than the small jobber, is unnatural and unsatisfactory. Quantity governs price as naturally as water flows down hill, and this differential in favor of the small jobber against the large retailer is unjust. In most cases this same small jobber enters into direct competition with this same retailer, with an advantage to which he is not entitled. You may dam a natural stream and hold it back for a time, but it eventually overflows and resumes its natural course.

It seems to me that the retailer should wake up to the fact that no one can reasonably find fault with him for reaching after what naturally belongs to him. He is depending and leaning too much on others. While associated associations may do much, yet "every tub must stand on its own bottom," and the retailer must look out for himself.

The officers of the retailers' associations are doing a good work in maintaining harmonious relations with the jobber. This is very desirable. Yet, if I am correct in my opinions, there are many conflicting interests, and up to present writing I believe there is only one condition on which the lion has laid down with the lamb, and that is with the lamb inside.

Retailers Should Wake Up.

The retailer should not await results from conventions and committee meetings. He should be awake to whatever will benefit his individual business, and he may, with profit, study the methods of the catalogue houses. If they are good business getting methods, why not adopt them himself?

The distribution of the retailer's own printed matter through a carefully prepared mailing list has been tried by a number who have contributed to your columns, and, if my memory is correct, there is unanimous opinion as to the effective and profitable result.

One of the wideawake retailers from the South, in a

recent letter to *The Iron Age*, proposed a set of rules for the improvement of the business of his class, first of which was "Buy all you can from manufacturers."

The Manufacturer's Position.

The manufacturer just now seems to be between the devil and the deep sea and is taking his time to shape his course. A large majority of them have a trade with the retailers which they cannot afford to and will not give up, and others see a nice line of this trade which they might have, but which apparently they are afraid to reach after. Perhaps both manufacturer and retailer need to acquire a little of that grasp of which the jobber has given them an illustrious example. Or perhaps the jobber might let go a little, and let the manufacturer feel that he may pass the time of day with the retailer without being obliged to give an account of it at the next meeting.

Harmony is a good thing. Let us have harmony, but let us remember that it takes a pretty liberal application of the Golden Rule to get it. Yours truly,

GEO. A. BUSHNELL.

CHICAGO, ILL., July 22, 1904.

"TURNING DOWN THE JOBBER."

To the Editor: We note in your issue of July 28 the letter from "a long established retail house in New England," indorsing the conclusions of the Illinois retailer who bought (see his letter in *The Iron Age*, July 14) an \$8000 stock of assorted Hardware from a prominent jobber, compared the prices with those of a well known catalogue house, and thinks "the only way is for the retailer to buy direct from factory and leave the jobber out."

Let us see. Are these dozen articles and prices from an \$8000 stock fairly representative of the rest of the invoice? On the contrary, are they not exceptional and purposely chosen to prove a case?

Now, if this Illinois merchant is honestly anxious to know just how much he has been victimized by the prominent jobber, let him sit down and write to the different manufacturers of the specified articles for their quotations in exact quantities bought of the jobber. Furthermore, let him clear up his "want book" by ordering direct from the, perhaps, dozen different manufacturers necessary in the case. Figure out results and report the saving, all things considered. Our 35 and more years of retail life leads us to regard the jobber as, if not a necessity, at least a convenience, that we shall think twice about before concluding to "turn down." STUB PEN.

MUTUAL BENEFIT.

From a Kentucky Merchant: We have just read the article in *The Iron Age* of August 4, under the heading, "What a Lumber Merchant Says about Catalogue House Business." It is a long lane, you know, that has no turn, and a poor rule that does not work both ways.

Now we notice that before the lumber merchant gets through with his article he sees where his fingers were burnt. We have no doubt that had this merchant been throwing his efforts with the Hardware trade, his Hardwareman would have taken great pleasure in doing all he possibly could for the lumber merchant; but, of course, he did not feel that it was his duty to support his home merchant when the latter was buying goods that he handled out of his city.

The other day a farmer went to a merchant to buy a Plow. He told the merchant that he liked his Plow very well, but he could buy one in Chicago, with freight added, for 25 cents less than the merchant's price. As the merchant could not reduce his price the farmer left, and in a short time returned and told the merchant that he had two dozen eggs for sale and asked him to buy them. The merchant replied, "Please take your eggs to Chicago."

We think a great deal depends upon the customer. If he wants a merchant to stand by him he should stand by the merchant, who helps him build his churches and buys his produce from him and helps supply the country schoolhouse; if he burns out, assists him to his feet by

reduced prices or cash donation or long time credit, all of which the catalogue houses do not take an interest in. It is very essential that both customer and merchant should work to the one great end and stand by each other. Both will be benefited.

Now, we would like very much to hear what the Hardware merchant in the lumber merchant's city has to say. We have no doubt he would have about as many complaints as the lumber merchant, and we think it would be fair to listen to his tale of woe also.

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J. H. WILLIAMS & CO.'S ST. LOUIS EXHIBIT.

THE attractive exhibit of J. H. Williams & Co., Brooklyn, N. Y., at the World's Fair, St. Louis, is located in Machinery Hall, southwest corner, Block 32. The dimensions of the space are 18 x 35 feet. The fence inclosing the exhibit consists of sample boards of all classes of drop forgings alternating with samples of their Chain Pipe Wrench product. On aisle side to the right and left of entrance and also within the enclosure are special showcases containing finished articles made from special drop forgings and loaned to the company by its customers. On a table are exhibited dies and forgings, which represent progressively the stages of manufacture from the first blow of Hammer on heated bar of steel to the last or completing operation by machinery. The sides of the handsome pavilion are revolved by electricity, thus giving animation to the exhibit. The pictures of smithy mythological and historical subjects are a part of an interesting collection made by J. H. Wil-

Valves, &c., explanations of measurements are given. Several pages are devoted to tables of useful information, which, with the foregoing somewhat special features, will, no doubt, be of assistance to the trade, and as such be appreciated by them. Merchants receiving loose leaf catalogues have heretofore been depended upon to put in new sheets, showing new goods, changes in lists, &c. This company pursues a different course in this regard, by sending the book without the key, and when received by a customer it is a permanently bound book, which cannot be opened unless a key is made for it. New sheets are mailed to the company's salesmen, in care of each customer, and the first duty of each salesman upon entering a customer's store is to call for the catalogue, look over it carefully for any torn sheets or broken parts of covers, and put in new sheets which have been sent since his last trip. The salesmen keep the house posted as to the condition every book is in, and the company considers each of its catalogues one of its best salesmen. The catalogue taken as a whole is complete in the various lines shown, well printed on good paper, con-



J. H. Williams & Co.'s St. Louis Exhibit.

liams, many of them coming from abroad. The 5-foot highly burnished gold emblem of Arm and Wrench surmounting the pavilion is carved from wood, and is intended to typify the art of drop forging as applied to mechanical subjects.

KELLEY-HOW-THOMSON COMPANY'S CATALOGUE.

THE KELLEY-HOW-THOMSON COMPANY, Duluth, Minn., has just issued a 1395-page loose leaf catalogue relating to Heavy and Shelf Hardware, Iron and Steel, Cutlery and Sporting Goods. A view of the company's warehouse and offices is given at the front of the book, and on the page opposite is a diagram showing their location, wharf where steamers unload goods directly into the warehouse, also track bringing cars to the door. The location of freight depots with reference to the company's warehouse is given, emphasizing the facilities for shipping goods, the haul to the depot furthest from the warehouse being only 600 feet. The alphabetically arranged index covers 46 pages, and is cross indexed to show its contents under all regular names. A design and numerical index of Builders' Hardware, together with a comparison of finishes, occupy three pages, while on the nine pages devoted to the illustration, description and prices of Cabinet Locks the comparative numbers of various manufacturers are given. Lists of Screws are in a convenient and condensed form, and in the lists embracing Axles, Bolts, Screws, &c., a larger space has been left after every third or fourth line as a guide for the eye to facilitate ready reference to list prices. On pages devoted to Pipe, Fittings, &

veniently arranged and reflects great credit upon the company.

NEW YORK TRADING STAMP LAW UNCONSTITUTIONAL.

SUPREME COURT JUSTICE EDWIN A. NASH of the Seventh Judicial District, New York, has declared unconstitutional the law passed by the New York State Legislature at its last session regulating the issue of trading stamps and attaching a penalty for violating the act. In rendering an opinion the Justice declared that it is the settled law of this State that it is not within the power of the Legislature to suppress or regulate the issue or sale of trading stamps. The opinion was rendered in the case of Edward Appel, a cigar dealer who was arrested for selling a cigar and a package of tobacco, accompanied by tobacco coupons which did not have a redeemable cash value printed upon their face as required by the Trading Stamp law.

With a view to warning the New England trade against the operations of an impostor, the Congdon & Carpenter Company, Providence, R. I., has issued a circular in which a portrait of the offender is presented, with the further description that he is rather short and thickset, with a mole on one side of his face. The company offers \$25 reward for his apprehension. It is stated that he has lately served a short term in prison, but on his release again resumed his old practice of collecting money fraudulently from that company's customers and others.

THE CHANTRELL TOOL COMPANY'S NEW CATALOGUE.

THE CHANTRELL TOOL COMPANY, Reading, Pa., and 101 Reade street, New York, has just issued a fine new illustrated and descriptive catalogue of Tools, Hardware Specialties and Builders' Hardware. An effort has been exerted to make the contents exceptionally plain and concise. Department No. 1, to page 22 inclusive, is devoted to lines of Hammers, Hatchets and Axes, both of steel and cast iron, together with Pliers, Braces, Spring Hinges, Screw Drivers, Nail Pullers, Sash Chain, Trowels, Tobacco Cutters, &c. The remainder of the 134 pages in Department No. 2 contains complete lines of Builders' and Shelf Hardware, not including cylinder goods.

PRICE-LISTS, CIRCULARS, &c.

Manufacturers in Hardware and related lines are requested to send us duplicate copies of catalogues, price-lists, &c., one copy for our Catalogue Department in New York and another for our London office; and at the same time to call our attention to any new goods or additions to their lines, of which appropriate mention will be made, besides the brief reference to the catalogue or price-list in this column.

LALANCE & GROSJEAN MFG. COMPANY, New York: Supplemental catalogue under date of July, 1904, relating to Turquoise Pearl-Agate Ware, Copper Soup Stock Pots, Stamped, Pieced, Japanned and Galvanized Ware.

DREW ELEVATED CARRIER COMPANY, Waterloo, Wis.: Catalogue illustrating the Elevated Carrier, adapted to farm and stable uses.

THE F. BISSELL COMPANY, Toledo, Ohio: Illustrated folder of Jandus Interchangeable Arc Lamps, showing a line of inclosed Arc Lamps.

BRAINERD MFG. COMPANY, Dispatch, N. Y.: Special Brass, Bronze and Steel Cabinet and Refrigerator Hardware, Name Plates, Adjustable Window Shade Bracket, Mirror Holder, &c.

THE AVERY STAMPING COMPANY, Cleveland, Ohio: Catalogue relating to Never-Break Steel Cooking Utensils, Post Hole Diggers, Washers, Garden Trowels, Hollow Back Shovels, Spades and Scoops, and Patented Plain Back Shovels and Spades. The company's best grade Shovels, Spades and Scoops is the Never-Break, the second grade is the National, the third the Buckeye, and the fourth, the Mohawk. It also makes Alaska Steel Snow Shovels, Tropic Ash or Furnace Shovels, and Klondike Sidewalk Scrapers, and Steel Seats.

F. E. MYERS & BRO., Ashland, Ohio: Advertising mechanical novelty, illustrating their advertising phrase of "Take off your hat to the Myers," calling attention to the Myers Pumps, Hay Tools, Stayon Door Hangers, &c.

THE JAMES SWAN COMPANY, Seymour, Conn., Russell & Erwin Mfg. Company, sole agent, 43-47 Chambers street, New York: 1904 illustrated catalogue and price-list, including Carpenters' Slicks, Chisels, Gouges, Drawing Knives, Augers and Bits, Gimlets and Gimlet Bits, Boring Machines, Screw Drivers, Tool Chests and Cabinets, &c.

THE KILBORN & BISHOP COMPANY, New Haven, Conn.: Catalogue No. 3, relating to Expansive Bits, Countersinks, Pliers, Saw Sets, Saw Gauges, Box Openers, Cold, Cape, Brick and Round Nose Chisels, Magnet and Tack Hammers, Repair Chain Links, Bridle Bits, &c. The company has facilities for making special drop forgings from steel, iron, copper, &c.

LUTHER BROTHERS COMPANY, North Milwaukee, Wis.: Catalogue devoted to illustrations and descriptions of the Fire Fly Nonheating Carborundum Sharpener, for sharpening Tools, Scissors, Cutlery, &c.

CRANDAL, STONE & Co., Binghamton, N. Y.: Catalogue No. 16, relating to Carriage Trimming Hardware and Specialties. The firm has confined its productions, with a few exceptions, to such articles as enter into the construction of carriage tops, and its line of such goods is very complete.

THE UPSON NUT COMPANY, Unionville, Conn., and Cleveland, Ohio: Illustrated price-list of Nuts, Bolts, Coach and Lag Screws, Bolt Ends, Hanger Screws, Bed Screws, Rivets, Axle Clips, Boxwood and Ivory Rules, Belt Fasteners, &c.

WESTERN BLOCK COMPANY, Lockport, N. Y.: Illustrated catalogue and price-list, 1904, devoted to a large and varied line of Wood, Wrought Iron and Steel Tackle Blocks, Anvil brand.

CHANDLER & FARQUHAR COMPANY, Boston, Mass.: Catalogue No. 105, pertaining to Tools and Supplies for machinists, blacksmiths, amateurs and all kinds of metal workers.

M. S. BENEDICT MFG. COMPANY, East Syracuse, N. Y.: Pamphlet announcing that the company is now ready for distribution of its new catalogues for the coming season, showing a new and complete line of Silver Plated Ware, Flat Ware and Metal Novelties.

Express Call Bulletin.

Hendricks & Class, 25 West Broadway, New York, are introducing the patented express call bulletin herewith illustrated, and which they believe to be the first of its kind regularly put on the market as a merchantable article. It is made of $\frac{3}{4}$ -inch stuff with a back, and is $6\frac{1}{2}$ x $6\frac{1}{2}$ x 34 inches in dimensions; the casing is painted black, and the slats, 3 x 21 inches, are in different colors. The main features of this article are the slotted bottom plate, and serrated or saw tooth edges of metallic strip connected with each slat, so that pulling the

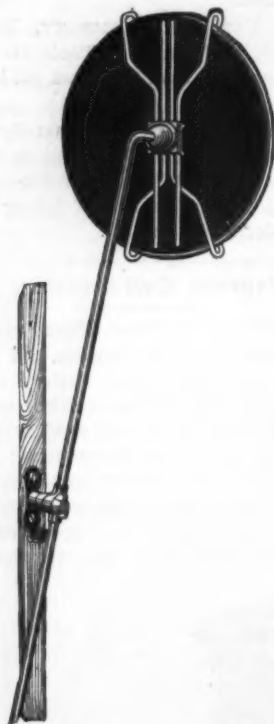


Express Call Bulletin.

lead ball pendant of any slat throws out the one wanted, or by varying the angles all or any number of the eight can be readably displayed at one time. The slats are painted red, blue, cream white, black, &c., and regularly contain the names of the leading express companies—viz.: Adams, American, United States, National, New York & Boston, Wells Fargo & Co.—with two blanks for local calls. Any names desired, however, can be substituted to suit purchasers or meet local conditions. The bulletin is intended for fastening to the front of building or similar convenient place, and if so ordered can be installed so as to be connected with basement or subcellar shipping department for the convenience of a shipping clerk so located. With this device there is no trouble with misplaced cards, or, as often happens, their blowing away.

The Good Light Mirror Holder.

The accompanying cut represents a holder for mirrors, primarily for use in shaving, but which may also be used by ladies in dressing the hair. The illustration shows the back of a mirror and the manner in which it is held. For shaving the holder is attached on either side of the window casing, the hook on the lower part of the holder being for razor strop. The rod is 15 inches long and

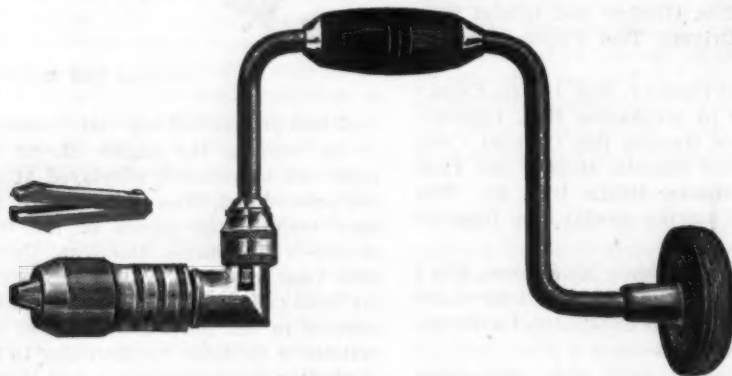


The Good Light Mirror Holder.

can be moved to any desired angle and bring the mirror in front of the window. The holder is joined to the rod with a ball and socket joint, which allows the mirror to be moved to every conceivable angle. For ladies' use the holder can be attached to window casing, dresser or wall. The arms are adjusted to hold mirrors from 5 to 12 inches. The holder is furnished in nickel plate or old copper, without mirror, or with 5-inch beveled mirror, framed, by the Brainerd Mfg. Company, Dispatch, N. Y.

Mason & Parker Bit Braces.

Mason & Parker, Winchendon, Mass., a branch of the National Novelty Corporation, 826 Broadway, New York, are making improvements in bit braces, shown herewith. From one piece of heavy sheet steel is drawn a long quill to support the head of the ball, having a wide flange to protect the wood part against splitting. The quill is held to the head by four large screws, and is lined with a self lubricating device to insure against wearing the bearing. The construction inside is such that no metal



Mason & Parker Bit Braces.

or wood comes in contact with the milled end of the sweep where it is headed over to fasten to the body of the brace, to insure against the quill coming off. Ball

bearings are applied to certain numbers of braces, the bearings being in large circles to create a broad seat. In the same line with the steel quill the firm furnishes a steel cap of heavy metal, which completely encircles the wooden head, to give still more protection against splitting.

Antifriction Hay Fork Pulley No. 1.

The Stowell Mfg. & Foundry Company, South Milwaukee, Wis., is offering the hay fork pulley shown herewith. It has malleable iron shells, steel roller bushings, turned steel pins, swivel ring, the whole finished in Japan.



Antifriction Hay Fork Pulley No. 1.

The wheel is 5 inches in diameter. A No. 3 pulley is made having a swivel hook instead of a ring, otherwise being the same.

Center Grip Toy Sad Iron.

A center grip detachable handle sad iron, with stand, designed for the 10-cent trade, is shown in the accompanying cut.



Center Grip Toy Sad Iron.

panying cut. It is made in three sizes, with stand, each size in two finishes—nickeled, and polished and gold.

The Grey Iron Casting Company, Mount Joy, Pa., a branch of the National Novelty Corporation, 826 Broadway, New York, is offering these goods.

Yankee Lemon Squeezer and Cork Puller.

The Gilchrist Company, 133-145 Lafayette street, Newark, N. J., for which John H. Graham & Co., 113 Chambers street, New York, are direct representatives, has recently put on the market the Yankee lemon squeezer and No. 7 Yankee cork puller, herewith illustrated. The



Fig. 1.—Yankee Lemon Squeezer.

lemon squeezer is equally good for general house use, soda fountains, hotels, restaurants, clubs or wherever a rapid lemon squeezer is needed. Fig. 1 shows the first movement, beginning with the introduction of a half lemon, Fig. 2 representing the simultaneous action of squeezing and automatically pouring the juice into a receptacle below, held in position by an adjustable rod.



Fig. 2.—Method of Automatically Squeezing and Pouring.

This squeezer is said to get all the juice, as the action is such that 50 pounds pressure on the handle exerts 1200 pounds on the lemon. The squeezer is nicked and the cups are large enough to hold the largest lemons. The parts which come in contact with the lemon are heavily tinned. All the parts can be quickly lifted out of the clamp socket for cleaning. Fig. 3 is the No. 7 Yankee cork puller. It is strong and compact and comparatively small. It quickly and safely draws the cork from any bottle, and as readily recorks the bottle after part of the contents has been used. Some of the advantages of this construction to which the manufacturers call attention are that the handle is down out of the way; the machine occupies but little room above the counter, and the rubber lined

bottle holding clamps move together automatically so that all sized bottles are centered and held directly beneath the corkscrew, thus preventing the breaking of bottles or of the corkscrew. The internal mechanism is

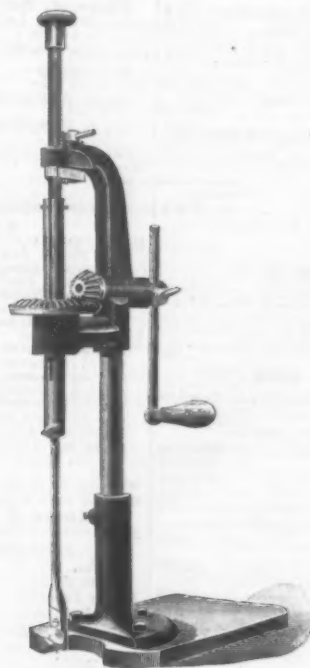


Fig. 3.—Yankee Cork Puller.

both simple and strong. It can be furnished in bronze, nickel plate and silver plate finishes.

Goodell Boring Tool.

The accompanying cut illustrates a new tool for boring holes, especially through hard wood floors, where difficulty is experienced in using a common bit brace. It is made strong and rigid, and accurate holes up to 3 inches in diameter can be made, it is explained, in half the time and with a saving of strength. The feed screw is of the same pitch as the lead of the bit, to overcome the trouble of the bit not feeding, and after going to the desired depth the bit can be instantly raised. The tool is geared back from $2\frac{1}{2}$ to 1, and has an adjustable handle to regulate the speed. It has a capacity of boring to a



Goodell Boring Tool.

depth of 9 inches, and for a small additional charge an extension can be furnished to go to a greater depth. The center of a hole can come within 2 inches of a side or corner. Each tool is furnished with a Clark expansion bit, with two cutters, boring from $\frac{1}{8}$ to 3 inches. The tool is especially adapted for plumbers and steam fitters, while it is also recommended for carpenters' use. It is put on the market by the Goodell Mfg. Company, Greenfield, Mass.

Current Hardware Prices.

REVISED AUGUST 9, 1904

General Goods.—In the following quotations General Goods—that is, those which are made by more than one manufacturer, are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

Special Goods.—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

Range of Prices.—A range of prices is indicated by means of the symbol @. Thus 33 $\frac{1}{2}$ @ 33 $\frac{1}{2}$ & 10% signifies that the

price of the goods in question ranges from 33 $\frac{1}{2}$ per cent. discount to 33 $\frac{1}{2}$ and 10 per cent. discount.

Names of Manufacturers.—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE DIRECTORY, issued May, 1904, which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

Standard Lists.—A new edition of "Standard Hardware Lists" has been issued and contains the list prices of many leading goods.

Additions and Corrections.—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

Abrasives—

Adamite in Carloads: \$ ton \$90@100
Crystalline..... \$ ton \$120@140
See also *Emery*.

Adjusters, Blind—

Domestic, \$ doz. \$8.00..... 33 $\frac{1}{2}$ @
North's..... 10%
Zimmerman's—See *Fasteners, Blind*.

Window Stop—

Ives' Patent..... 35%
Taplin's Perfection..... 35%

Ammunition—See Caps, Cartridges, Shells, &c.

Anvils—American—

Eagle Anvils..... \$ 7 $\frac{1}{2}$ @7 $\frac{1}{2}$ @
Hay-Budden, Wrought..... \$ 9 $\frac{1}{2}$ @
Horsehoe brand, Wrought..... \$ 9 $\frac{1}{2}$ @
Trenton..... \$ 9 $\frac{1}{2}$ @

Imported—

Peter Wright & Sons..... \$ 10 $\frac{1}{2}$ @

Anvil, Vise and Drill—

Millers Falls Co., \$18.00..... 15 $\frac{1}{2}$ @10%

Apple Parers—See Parers, Apple, &c.

Aprons, Blacksmiths'—

Hull Bros. Co..... 30%
Livingston Nail Co..... 30%

Augers and Bits—

Com. Double Spur..... 75@75 $\frac{1}{2}$ @
Boring Machine Augers..... 65@70%
Car Bits, 12-in. twist..... 60@60 $\frac{1}{2}$ @
Jennings' Pattern..... 60@60 $\frac{1}{2}$ @
Ford's Auger and Car Bits..... 40 $\frac{1}{2}$ @
Forester Pat. Auger Bits..... 20%
C. E. Jennings & Co..... 25%
No. 10 Exp. Lip, R. Jennings' List..... 40 $\frac{1}{2}$ @
No. 90, R. Jennings' List..... 40 $\frac{1}{2}$ @
Russell Jennings..... 25@10 $\frac{1}{2}$ @
L'Hommiedieu Car Bits..... 15%
Mayhew's Countersink Bits..... 40%
Millers Falls..... 50@10 $\frac{1}{2}$ @
Ohio Tool Co.'s Bailey Auger and Car Bits..... 40@10%
Pugh's Black Bit..... 20%
Pugh's Jennings' Pattern..... 35%
Snell's Auger Bits..... 60%
Snell's Bell Hangers' Bits..... 60%
Snell's Car Bits, 12-in. twist..... 60%
Wright's Jennings Bits (R. Jennings list)..... 50%

Bit Stock Drills—

See Drills, Twist.

Expansive Bits—

Clark's, small, \$18; large, \$20..... 50@10%
Clark's Pattern, No. 1, \$ doz. \$20..... 50@10%
No. 2, \$18..... 50@10%
Ford's, Clark's Pattern..... 50@10%
C. E. Jennings & Co., Steer's Pat..... 25%
Swan's..... 60%

Gimlet Bits—

Common Double Cut, gro. \$2.00@3.25
German Pattern..... gro. \$4.50@4.75

Hollow Augers—

Bonney Pattern, per doz. \$10.00@11.00
Ames..... 25@10%
New Patent..... 25@10%
Universal..... 25%
Wood's Universal..... 25%

Ship Augers and Bits—

Ford's..... 40%
C. E. Jennings & Co..... 40%
L'Hommiedieu's..... 15%
Watrous..... 35@5%
Ohio Tool Co.'s..... 40%
Snell's..... 40%

Awl Hafts, See Hafts, Awl.

Awls—

Brad Awls..... gro. \$2.75@3.00
Unhandled, Shouldered, gro. \$3@3.60
Unhandled, Patent..... gro. 60@70%
Peg Awls.....
Unhandled, Patent..... gro. 31@34%
Unhandled, Shouldered, gro. 65@70%

Scratch Awls—

Handled, Common..... gro. \$3.50@4.00
Handled, Socket..... gro. \$11.50@12.00
Hurwood..... 40%

Awl and Tool Sets—See Sets, Awl and Tool.

Axes—

Single-Bit, base weights (up to 3 $\frac{1}{2}$ lb.)
First Quality..... \$6.25@6.50
Second Quality..... \$5.75@6.00
Axle Grease—See Grease, Axle

Axles—

Concord, Loose Collar..... 50@54%
Concord, Solid Collar..... 50@54%
No. 1 Common..... 44@54%
No. 1 $\frac{1}{2}$ Com. New Style..... 44@54%
No. 2 Solid Collar..... 44@54%
Nos. 7, 8, 11 and 12..... 60 $\frac{1}{2}$ @60 $\frac{1}{2}$ @
Nos. 13 to 14..... 60 $\frac{1}{2}$ @60 $\frac{1}{2}$ @
Nos. 15 to 18..... 60 $\frac{1}{2}$ @60 $\frac{1}{2}$ @
Nos. 19 to 22..... 60 $\frac{1}{2}$ @60 $\frac{1}{2}$ @

Boxes, Axle—

Common and Concord, not turned..... 15. 44@44%
Common and Concord, turned..... 15. 44@44%
Half Patent..... 15. 44@44%

Bait— Fishing—

Hendryx..... 20%
A Bait..... 20%
B Bait..... 20%
Competitor Bait..... 20%

Balances— Sash—

Caldwell new list..... 50%
Pulman..... 50@10@50%

Spring—

Spring Balances..... 60@60 $\frac{1}{2}$ @
Chatillon's.....
Light Spg. Balances..... 40@10%
Straight Balances..... 40%
Circular Balances..... 40%
Large Dial..... 35%

Barb Wire—See Wire, Barb.

Bars— Crow—

Steel Crowbars, 10 to 40 lb., per lb. \$0.35@

Towel—

No. 10 Ideal, Nickel Plate..... \$ gro. \$8.50

Beams, Scale—

Scale Beams, List Jan. 12, '92..... 40@10%
Chatillon's No. 1..... 30%
Chatillon's No. 2..... 40%

Beaters— Carpet—

Holt-Lyon Co.....
No. 12 Wire Coppered \$ doz. \$0.25;
Tinned..... \$1.00
No. 11 Wire Coppered \$ doz. \$1.10;
Tinned..... \$1.20
No. 10 Wire Galvanized..... \$ doz. \$1.75
Western W. G. Co.....
No. 1 Electric..... \$ gro. \$7.50
No. 2 Buffalo..... \$ gro. \$9.00
No. 3 Perfection Dust..... \$ gro. \$8.00

Egg—

Holt-Lyon Co.....
Holt, No. A, Japanned..... \$ doz. \$1.20
Holt, No. 1, Tinned..... \$ doz. \$1.50
Holt, No. 2, Japanned..... \$ doz. \$2.00
Holt, No. 3, Tinned..... \$ doz. \$2.25
Lyon, No. 2, Japanned..... \$ doz. \$1.25
Lyon, No. 3, Japanned..... \$ doz. \$1.50
Taplin Mfg. Co..... \$ gro.
No. 65 Improved Dover..... \$0.00
No. 75 Improved Dover..... \$0.50
No. 100 Improved Dover..... \$0.70
No. 103 Improved Dover, Tind..... \$0.50
No. 150 Improved Dover, Hotel..... \$1.00
No. 152 Imp'd Dover, Hotel, Tind..... \$1.15
No. 200 Imp'd Dover Tumbler..... \$2.50
No. 302 Imp'd Dover Tumbler, Tind..... \$0.50
No. 300, Imp'd Dover Mammoth..... \$4.00
Western W. G. Co., Buffalo..... \$7.00
Wonder (S. S. & Co.)..... \$ gro. net, \$6.00

Bellows—

Blacksmith, Standard List..... 75@75 $\frac{1}{2}$ @

Blacksmiths'—

Inch..... 30 32 34 36 38 40
Each, \$3.50 3.75 4.25 4.80 5.35 6.15
Extra Length:
Each, \$4.00 4.55 5.10 5.60 6.10 7.50

Molders—

Inch..... 10 12 14
Doz..... \$3.50 10.00 12.00

Hand—

Inch..... 6 7 8 9 10
Doz..... \$1.25 4.50 5.00 6.50 7.75

Bells— Cow—

Ordinary goods..... 75@75 $\frac{1}{2}$ @
High grade..... 70@10@70 $\frac{1}{2}$ @
Jersey..... 75@10%
Texas Star..... 50%

Door—

Abbe's Gong..... 45%
Barton Gong..... 50%
Home, R. & E. Mfg. Co.'s..... 55@10%
Lever and Pull, Sargent's..... 60@10@10%
Yankee Gong..... 35%

Hand—

Hand Bells, Polished, Brass..... 60@60 $\frac{1}{2}$ @

White Metal—

Nickel Plated..... 50@50 $\frac{1}{2}$ @
Swiss..... 60@60 $\frac{1}{2}$ @
Cone's Globe Hand Bells..... 60@60 $\frac{1}{2}$ @
Silver Chime..... 60@60 $\frac{1}{2}$ @

Miscellaneous—

Farm Bells..... lb. \$14@14%
Steel Alloy Church and School..... 50@10@50 $\frac{1}{2}$ @
Table Call Bells..... 50@50 $\frac{1}{2}$ @
Trip Gong Bells..... 50@10@50 $\frac{1}{2}$ @

American Tube & Stamp'g Co. Gongs..... 75%

Belting— Rubber—

Agricultural (Low Grade)..... 75@75 $\frac{1}{2}$ @
Common Standard..... 70@70 $\frac{1}{2}$ @
Standard..... 65@70%
Extra..... 60@60 $\frac{1}{2}$ @
High Grade..... 50@50 $\frac{1}{2}$ @

Leather—

Extra Heavy, Short Lap..... 60@60 $\frac{1}{2}$ @
Regular Short Lap..... 60@10@60 $\frac{1}{2}$ @
Standard..... 70@70 $\frac{1}{2}$ @
Light Standard..... 70@10%
Cut Leather Lacing..... 60@10%
Leather Lacing Sides, per sq. ft. 18c

Bench Stops—See Stops, Bench

Benders and Upsetters, Tire—

Detroit Perfected Tire Bender..... 40%
Green River Tire Benders and Upsetters..... 20%
Detroit Stoddard's Lightning Tire Upsetters, No. 1, \$4.25; No. 2, \$7.25; No. 3, \$10.50; No. 4, \$16.25; No. 5, \$20.50.

Bicycle Goods—

John S. Long's Son's 1904 list:
Chain..... 50%
Parts..... 50%
Spokes..... 50%
Tubes..... 60%

Bits—

Auger, Gimlet, Bit Stock Drills, &c.—
See Augers and Bits.

Blocks— Tackle—

Common Wooden..... 70@10@75 $\frac{1}{2}$ @
Hollow Steel Blocks, with Ford's Patent Sheaves..... 50@10%
Lane's Patent Automatic Lock and Junior..... 30%
Stowell's Novelty, Mal. Iron..... 50@10%
Stowell's Self Loading..... 60%
See also Machines, Hoisting.

Boards, Stove—

Zinc, Crystal, &c..... 30@10@40@10%

Boards, Wash—

See Washboards.

Boils—

Carriage, Machine, &c.—
Common Carriage..... 75@...
Phila. Eagle, \$5.00 list May 24, '95..... 80@10%
Bolt Ends, list Feb. 14, '95..... 75@...
Machine..... 75@75 $\frac{1}{2}$ @
Machine with C. & T. Nuts..... 70@5@...%

Door and Shutter—

Cast Iron Barrel, Round Brass Knob:
Inch..... 3 4 5 6 8
Per doz. \$0.25 30 30 37 35
Cast Iron Spring Foot:
Inch..... 6 8 10
Per doz. \$1.00 1.25 1.75
Cast Iron Chain, Flat, Japanned:
Inch..... 6 8 10
Per doz. \$0.75 1.05 1.30
Cast Iron Shutter, Brass Knobs:
Inch..... 6 8 10
Per doz. \$0.67 80 1.00
Wrt Barrel, Jap'd, 75@10@75 $\frac{1}{2}$ @10%
Wrought..... Bronzed, 10@5@50@10%
Wrought Flush, B. K., 50@10@60@10%
Wrought Shutter..... 40@10@10@60@5%
Wrought Square Neck..... 50@50 $\frac{1}{2}$ @
Wrought Sunk, Flush..... 50@50 $\frac{1}{2}$ @
Ives' Patent Door..... 60%

Stove and Plow—

Plow..... 65@10@...
Stove..... 30@5@30@10@5%

Tire—

Common..... 75@...
Norway Iron..... 80%
American Screw Company..... 80%
Norway Phila. list Oct. 16, '94..... 80%

Eagle Phila. list Oct. 16, '94..... 80%

Bay State, list Dec. 28, '99..... 73@4

Franklin Moore Co..... 73@4

Norway Phila. list Oct. 16, '94..... 80%

Eagle Phila. list Oct. 16, '94..... 80%

Bellevue, list Dec. 28, '99..... 73@4

Russell, Burdall & Ward Bolt & Nut Co.

Empire, list Dec. 28, '99..... 73@4

Norway Phila. list Oct. '94..... 80%

Open Nut Co.:

Tire Bolts..... 72@4%

Borers, Tap—

Borers Tap, Ring, with Handle:
Inch..... 1 $\frac{1}{2}$ 1 $\frac{1}{4}$ 1 $\frac{3}{8}$ 1 $\frac{1}{2}$ 1 $\frac{3}{4}$ 2
Per doz. \$4.30 5.00 5.75 7.25
Inch..... 2 $\frac{1}{2}$ 3 $\frac{1}{4}$ 4 $\frac{1}{2}$ 5 $\frac{1}{2}$ 6 $\frac{1}{2}$ 7 $\frac{1}{2}$
Per Doz..... \$8.65 11.50
Enterprise Mfg. Co., No. 1, \$1.95; No. 2, \$1.05; No. 3, \$2.50 each..... 25%

Boxes, Mitre—

C. E. Jennings & Co..... 30%
Langdon..... 15@10%
Perfection..... \$ doz. \$90.00
Schatz..... 40%

Braces—

Common Ball, American..... \$1.15@1.25
Barber's..... 50@10@50 $\frac{1}{2}$ @
Fray's Genuine Spofford's..... 60%
Fray's No. 70 to 120, 81 to 123, 207 to 414..... 40%
C. E. Jennings & Co..... 50@5%
Mayhew's Ratchet..... 30%
Mayhew's Quick Action Hay Patent..... 50%
Millers Falls Drill Braces..... 25@10%
P. S. & W. Co. Peck's Patent..... 40@10@65%

Brackets—

Wrought Steel..... 80@10@...%

Bradley's Wire Shelf:
Full cases..... 80@10@10%
Broken cases..... 80@10%
Griffin's Pressed Steel..... 30%
Griffin's Folding Brackets..... 70@10%
Stowell's Cast Shelf..... 75%
Stowell's Sink..... 50%
Western W. G. Co., Wire..... 60@10%

Bright Wire Goods—See Wire and Wire Goods.

Brollers—

Western W. G. Co..... 80%
Wire Goods Co..... 75@75 $\frac{1}{2}$ @10%

Buckets, Well and Fire—

See Pails.

Bucks, Saw—

Booster..... \$ gro. \$36.00

Bull Rings—See Rings, Bull.

Butts— Brass—

Wrought list Sept., '96..... 20@30%
Cast Brass, Tiebout's..... 50%

Cast Iron—

Fast Joint, Broad..... 50@50 $\frac{1}{2}$ @
Fast Joint, Narrow..... 50@50 $\frac{1}{2}$ @
Loose Joint..... 70@5@70 $\frac{1}{2}$ @
Loose Pin..... 70@5@70 $\frac{1}{2}$ @
Mayer's Hinges..... 70@5@70 $\frac{1}{2}$ @
Parliament Butts..... 70@5@70 $\frac{1}{2}$ @

Wrought Steel—

Table and Back Flaps..... 75%
Narrow and Broad..... 75%
Inside Blind..... 75@10%
Loose Pin..... 75%
Loose Pin, Ball and Steeple Tip..... 80@20%
Japanned, Ball Tip Butts, 70@10%
Bronzed Wrt. Nar. and Inside Blind Butts..... 55@10%

Cages, Bird—

Hendryx, Brass:
3000, 5000, 1100 series..... 5%
1300 series..... 33%
200, 300, 600 and 900 series..... 40@10%
Hendryx Bronze:
700, 800 series..... 40@10%
Hendryx Enameled..... 40@10%

Calipers—See Compasses.

Calks, Toe and Heel—

Blunt, 1 prong..... per lb. 4@44%
Sharp, 1 prong..... per lb. 44@44%
Gautier, Blunt..... 45@44%
Gautier, Sharp..... 45@44%
Perkins, Blunt Toe..... \$ 3.65
Perkins, Sharp Toe..... \$ 4.15

Fodder Squeezers—
See Compressors.

Forks—

Base Discounts Aug. 1, 1892, list:	
Hay, 2 tine.....	50¢10¢5%
Boys' & Fish, 2 tine.....	50¢10¢5%
Hay & Boys', 3 tine.....	60¢5%
Hay & Boys', 4 tine.....	60¢5%
Champion Hay.....	60¢5%
Hay & Header, long 3 tine.....	60¢
Header, 4 tine.....	60¢
Harley, 4 & 5 tine, Steel.....	60¢20%
Manure, 4 tine.....	60¢15¢2%
Manure, 5 and 6 tine.....	66¢2%
Spading.....	70¢2%
Potato Digger, 6 tine.....	60¢10%
Sugar Beet.....	40¢10%
Coke & Coal.....	40¢10%
Heavy Mill & Street.....	60¢
Iowa Dig-Easy Potato.....	60¢10%
Victor, Hay.....	60¢15¢2%
Victor, Manure.....	60¢
Victor, Header.....	60¢
Champion, Hay.....	60¢5%
Champion Header.....	60¢
Champion Manure.....	60¢15¢2%
Columbia, Hay.....	60¢20%
Columbia, Manure.....	70¢
Columbia, Spading.....	70¢12%
Hawkeye Wood Harley.....	40¢
W. & C. Potato Digger.....	60¢10%
Acme Hay.....	60¢20%
Acme Manure, 4 tine.....	60¢10¢5%
Dakota Header.....	60¢20%
Jackson Steel Harley.....	60¢20%
Kansas Header.....	60¢
W. & C. Favorite Wood Harley.....	40¢
Plated—See Spoons.	

Frames—Saw—

White, Straight Bar, per doz.	75¢80¢
Red, Straight Bar, per doz	\$1.00¢1.25
Red, Double Brace, per doz.	\$1.40¢1.50

Freezers Ice Cream—

Each.....	\$1.25 \$1.60 \$1.90 \$2.20 \$2.80
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Fruit and Jelly Presses—

See Presses, Fruit and Jelly.

Fry Pans—See Pans, Fry.**Fuse—**

Hemp.....	\$2.75
Cotton.....	3.20
Waterproof Single Taped.....	3.05
Waterproof Double Taped.....	4.40
Waterproof Triple Taped.....	5.15

Gates Molasses and Oil—

Stebbins' Pattern..... 50¢10¢10¢10¢5%

Gauges—

Marking, Mortise, etc..... 50¢10¢10¢10¢5%

Chapin-Stephens Co.:..... 50¢10¢10¢10¢5%

Marking, Mortise, etc..... 50¢10¢10¢10¢5%

School's Patent..... 50¢10¢10¢10¢5%

Door Hangers..... 50¢10¢10¢10¢5%

Stanley & L. Co.'s Butt & Babbet..... 90¢20¢10¢10%

Gauge..... 90¢20¢10¢10%

Wire, Brown & Sharpe's..... 25¢

Wire, Morse's..... 25¢

Wire, P. S. & W. Co..... 30¢10%

Gimlets—Single Cut—

Nail, Metal, Assorted, gro. \$1.10¢1.50

Spike, Metal, Assorted, gro. \$2.80¢3.00

Nail, Wood Handled, Assorted, gro. \$1.75¢2.00

Spike, Wood Handled, Assorted, gro. \$1.35¢1.50

Class, American Window

See Trade Report

Classes, Level—

Chapin-Stephens Co. 60¢10¢10¢10%

Glue—Liquid Fish—

Bottles or Cans, with Brush..... 25¢50%

Cans (½ pts., pts., ½ gal., gal.)..... 25¢50%

International Glue Co. (Martin's)..... 40¢10%

Grease Axle—

Common Grade..... gro. \$1.10¢1.50

Dixon's Everlasting..... 10-b balls, etc. \$5

Dixon's Everlasting, in bxs. ½ doz. 1..... \$1.30; 2 b \$2.00

Grips, Nipple—

Perfect Nipple Grips..... 40¢10¢2%

Grids, Soapstone—

Pike Mfg. Co..... 33¢40¢33¢10%

Grindstones—

Bicycle Emery Grinder..... \$6.50

Bicycle Grindstones, each..... \$2.50¢3.00

Pike Mfg. Co.:.....

Improved Family Grindstones..... 30¢40¢

per inch, per doz..... \$3.00

Pike Mower Knife and Tool..... 30¢40¢

Grinder, each..... \$6.00

Velox Ball Bearing, mounted, Angle Iron Frames..... each, \$3.25

Halters and Ties—

Covert Mfg. Co.:.....

Web..... 40¢25%

Jute Rope..... 40¢50%

Sisal Rope..... 30¢

Cotton Rope..... 45¢25

Hemp Rope..... 45¢25

Covert's Saddlery Works:.....

Web and Leather Halters..... 70¢

Jute and Manila Rope Halters..... 70¢

Sisal Rope Halters..... 70¢20%

Jute, Manila and Cotton Rope Ties..... 70¢

Sisal Rope Ties..... 70¢10%

Hammers—

Handled Hammers.....

Heller's Machinists'..... 40¢10¢10¢10%

Heller's Farriers'..... 40¢10¢10¢10%

Magnetic Tack, Nos. 1, 2, 3, \$1.25, \$1.50, \$1.75..... 40¢40¢10¢10%

Peck, Stow & Wilcox..... 40¢10¢5%

Fayette R. Plumb..... 40¢10¢10%

Plumb, A. E. Nall..... 40¢10¢10%

Engineers' and B. S. Hand..... 50¢75¢45¢50¢10¢75¢45%

Machinists' Hammers..... 50¢10¢5%

Riveting and Tappers'..... 40¢25¢40¢10¢25%

Sargent's C. S. New List..... 40%

Heavy Hammers and Sledges.....

Under 5 lb..... lb 50¢ 80¢19¢30

5 to 10 lb..... lb 50¢ 10¢5%

Over 10 lb..... lb 50¢ 10¢5%

Wilkinson's Smith's..... 90¢10¢10 lb

Handles—**Agricultural Tool Handles—**

Axe, Pick, &c.....	45¢50¢5%
Hoe, Rake, &c.....	45¢50¢5%
Fork, Shovel, Spade, &c.:.....	45¢50¢5%
Long Handles.....	45¢50¢5%
D Handles.....	40%

Cross-Cut Saw Handles—

Atkins.....	40¢5%
Champion.....	45¢45¢10%
Disston's.....	50%

Mechanics' Tool Handle 75

Auger, assorted..... gro. \$2.50¢2.85

Brad Axl..... gro. \$1.65¢1.85

Chisel Handles—

Apple Tanged Firmer, gro. ass'd..... \$2.50¢2.65

Hickory Tanged Firmer, gro. ass'd..... \$2.15¢2.40

Apple Socket Firmer, gro. ass'd..... \$1.75¢1.95

Hickory Socket Firmer, gro. ass'd..... \$1.45¢1.60

Hickory Socket Framing, gro. ass'd..... \$1.60¢1.75

File, assorted..... gro. \$1.30¢1.40

Hammer, Hatchet, Axe, &c..... 50%

Hand Saw, Varished, doz..... 80¢85¢

Not Varished..... 65¢75¢

Plane Handles:

Jack doz. 30¢; Jack Bolted..... 75¢

Fore, doz..... 45¢; Fore, Bolted 90¢

Chapin-Stephens Co.:

Carving Tool..... 40¢40¢10%

Chisel..... 65¢65¢10%

File and Axl..... 65¢65¢10%

Saw and Plane..... 40¢40¢10%

Screw Driver..... 40¢40¢10%

Millers Falls Adj. and Hatchet Auger..... 15¢10%

Nicholson Simplicity File Handle..... \$1.30

per doz..... \$2.50¢2.85

Hangers—

NOTE.—Barn Door Hangers are generally quoted per pair, without track, and Parlor Door Hangers per double set with track, &c.

Barn Door, New Pattern, Round Groove, Regular:

1 inch..... 3 4 5 6 8

Single Doz..... 1.25 1.50 1.75 2.50

Barn Door, New England Pattern, Check Back, Regular:

1 inch..... 3 4 5 6 8

Single Doz..... 1.30 1.55 2.50 3.00

Allith Mfg. Co.:

Reliable No. 1..... per doz. \$3.00

Reliable No. 2..... per doz. \$9.00

Chicago Spring Butt Co.:

Friction..... 25%

Oscillating..... 25%

Big Twin..... 35%

Chisholm & Moore Mfg. Co.:

Baggage Car Door..... 50%

Elevator..... 30%

Railroad..... 50%

Cronk & Carrier Mfg. Co.:

Loose Axle..... 60¢10¢5%

Roller Bearing..... 70¢5%

Griffin Mfg. Co.:

8-10 Axle, No. 10, \$12.00..... 75%

Roller Bearing, No. 11, \$15.00..... 75%

Roller Bearing, Ex. Hy., No. 2, \$18.00..... 75%

Hinged Hangers \$18.00..... 60¢10%

Lane Bros. Co.:

Parlor, Ball Bearing..... \$4.00

Parlor, Standard..... \$3.15

Parlor, No. 105..... \$2.85

Parlor, New Model..... \$2.50

Parlor, New Champion..... \$2.25

Barn Door, Standard..... 60¢10¢5%

Hinged..... 60¢10%

Covered..... 70¢25%

Lawrence Bros.:

Advance..... 50¢10%

Cleveland..... 70¢25%

C. Upper, No. 75..... 60%

Crown..... 60¢10%

Easy Parlor Door, Dbl. Sets, \$2.50; Single Sets, \$1.25..... 60¢10%

Giant..... 60¢5%

Hummer..... 70¢25%

New York..... 60¢10%

Peoples..... 70¢25%

Sterling..... 60¢10%

McKinney Mfg. Co.:

No. 1, Special, \$15..... 60¢10%

No. 2, Standard, \$18..... 60¢10%

Hinged Hangers, \$16..... 60¢10%

Meyers' Stayon Hangers..... 60¢10%

Richards Mfg. Co.:

Pioneer Wood Track No. 3..... \$2.15

Ball B'r'g Steel Track No. 10..... \$2.40

Roller B'r'g Steel Track No. 12..... \$2.30

Ball B'r'g Steel Track No. 13..... \$2.40

Roller B'r'g Steel Track No. 14..... \$2.30

Hero Adjustable Track No. 19..... 50%

Adjustable Track Tandem Trolley Track No. 16..... 50%

Seal, Steel Track No. 5..... \$2.40

Auto Adjustable Track No. 22, 40¢10%

Trolley B. D. No. 17..... \$1.40

Trolley B. D. No. 120..... \$2.35

Trolley F. D. No. 121..... \$2.45

Trolley F. D. No. 131..... \$2.60

Safety Underwriters F. D. No. 101, 25¢

Tandem No. 44..... 70¢25%

Trolley F. D. No. 151..... \$3.00

Palace, Adjustable Track No. 12..... 60¢10%

B'al, Adjustable Track No. 10..... 40¢10%

Ives' Wood Track No. 4..... \$2.15

Trolley B. D. No. 29..... \$1.35

Trolley B. D. No. 24..... \$1.45

Trolley B. D. No. 27..... \$1.55

Trolley B. D. No. 28..... \$1.66

Roller Bearings Nos. 39, 40, 41, 43..... 70¢25%

Anti-friction No. 39..... 60¢10%

Hinged Tandem No. 48..... 60%

Folding Door B. B. Swivel No. 135, 30%

Safety Door Hanger Co.:

Storm King Safety..... 60%

T. S. Standard Hinge..... 60%

Stowell Mfg. and Foundry Co.:

Acme Parlor Ball Bearing..... 40%

Ajax Hinge Door..... 60%

Apex Parlor Door..... 50¢10¢5%

Atlas..... 60%

Baggage Car Door..... 50%

Climax Anti-Friction..... 50¢10%

Express..... 40%

Freight Car Door..... 50%

Interstate..... 60¢10%

Lundy Parlor Door..... 50¢10%

Magie..... 60%

Matchless..... 60¢10%

Nansen..... 50¢10%

Parlor Door..... 70¢25%

Railroad..... 50¢10%

Rex Hinge Door..... 50%

Street Car Door..... 50%

Steel, Nos. 300, 404, 500..... 50¢10%

Underwriters' Fire Door..... 40%

Wild West Warehouse Door..... 50%

Zenith for Wood Track..... 50¢10%

A. L. Swett Iron Works:

Wire Goods Co.

Acme.....	60&10%
Chief.....	70&10%
Crown.....	70&10%
V. Brace.....	50&10%
Czar Harness.....	50&10%

Wrought Iron—

Box, 6 in., per doz.	\$1.00; 8 in., \$1.25;
10 in., \$2.50.	
Cotton.....	dos. \$1.05@1.25
Wrought Staples, Hooks, &c.	See Wrought Goods.

Miscellaneous—

Hooks, Bench, see Stops Bench.	
Bush, Light, doz. \$5.50; Medium,	\$6.00; Heavy, \$6.50
Grass.....	Nos. 1 2 3 4
Best.....	\$1.50 1.75 2.00
Common.....	\$1.30 1.50 1.80 1.60
Potato and Manure.....	60¢@15¢
Wh. flintree.....	lb. 5¢@6¢
Hooks and Eyes:	
Brass.....	60¢@10¢@70¢
Malleable Iron.....	70¢@5¢@70¢@10¢
Covert Mfg. Co. Gate and Seattle Hooks	55¢
Covert Saddle Works' Self Looking	Gate and Door Hook..... 60¢
Gate and Door Hook.....	60¢
W. Madison Cut-Easy Corn Hooks	W. dos. \$3.25 net
Bench Hooks—See Bench Stops.	
Corn Hooks—See Knives, Corn.	

Horse Nails—See Nails, Horse

Horsehoes—

See Shoes, Horse.

Hose Rubber—

Garden Hose, 1/2-inch:	
Competition.....	ft. 4 1/2 @ 5 c
3-ply Standard.....	ft. 6 1/2 @ 7 c
4-ply Standard.....	ft. 7 1/2 @ 8 c
3-ply extra.....	ft. 8 1/2 @ 9 c
4-ply extra.....	ft. 10 @ 10 1/2 c
Cotton Garden, 1/2-inch, coupled:	
Low Grade.....	ft. 8 @ 7 c
Fair quality.....	ft. 8 @ 9 c

Irons—Sad—

From 4 to 10.....	lb. 3 1/4 @ 5 c
B. B. Sad Irons.....	lb. 3 1/4 @ 5 1/2 c
Chinese Laundry.....	lb. 4 1/4 @ 5 c
Chinese Sad.....	lb. 4 @ 4 1/2 c
Mrs. Potts' cents per set:	
Nos.....	50 55 60 65
Jap'd Tops.....	62 59 75 79
Tina Tops.....	65 62 75 79
New England Pressing, lb. 3 1/2 @ 4 c	

Pinkings—

Soldering Coppers 1/4 and 3/8.....	dos. 50¢@90¢
1 1/4 and 2.....	91¢@20¢

Jacks Wagon—

Covert Mfg. Co.:	
Auto Screw.....	30¢@5¢
Steel.....	45¢@2¢
Covert's Saddle Works':	
Daisy.....	60¢@10¢
Victor.....	90¢
Lockport.....	50¢
Lane's Steel.....	30¢@10¢@5¢
Richards' Tiger Steel, No. 130.....	40¢

Kettles—

Brass, Spun, Plain.....	50¢@25¢
Enamelled and Cast Iron—See Ware, Hollow.	

Knives—

Butcher, Kitchen, &c.:	
Poster Bros' Butcher, &c.....	30¢
Smith & Hemenway Co.....	40¢@10¢
Wilkinson Shear & Cutlery Co.....	50¢
Hay and Straw—See Hay Knives.	

Corn—

Withington Acme, W. dos., \$2.65; Dent,	\$2.75; Ad. Serrated, \$2.30; Serrated, \$2.10; Yankee No. 1, \$1.50;
Yankee No. 2, \$1.15.	

Drawing—

Standard List.....	70¢@10¢@70¢@10¢
C. E. Jennings & Co. Nos. 45, 46.....	60¢
Jennings & Griffin, No. 41, 42.....	60¢
Ohio Tool Co.'s.....	70¢
Swan's.....	70¢@10¢@5¢
Watrous.....	16¢@5¢
L. & L. J. White.....	30¢@5¢@25¢

Hay and Straw—

Iwan's Sickle Edge.....	W. dos. \$9.50
Iwan's Serrated.....	W. dos. \$10.00

Mincing—

Buffalo.....	W. gro. \$13.00
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Miscellaneous—

Furriers'.....	dos. \$3.00@3.55
Wostenholme's.....	W. dos. \$3.00@3.25

Knobs—

Base, 1/4-inch, Birch, or Maple,	Rubber tip, gro..... \$1.10@1.15
Carriage, Jap, all sizes.....	gro. 40¢@50¢
Door, Mineral.....	doz. 65¢@70¢
Door, Por. Jap'd.....	doz. 70¢@75¢
Door, Por. Nickel.....	dos. \$2.05@2.15
Bardley's Wood Door, Shutter, &c.....	15¢
Picture, Sargent's.....	60¢@10¢@10¢

Lacing Leather—

See Belting Leather—	
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Ladders, Store Etc.—

Lane's Store.....	25¢
Myers Noiseless Store Ladders.....	30¢
Richards Mfg. Co.:	
Improved Noiseless, No. 112.....	40¢
Climax Sh-If, No. 118.....	40¢
Trolley, No. 109.....	40¢

Ladies—Melting—

L. & O. Mfg. Co., Low List.....	25¢
P. & W.....	30¢
Reading.....	60¢
Sargent's.....	50¢@10¢

Lanterns—Tubular—

Regular Tubular No. 0, doz. \$1.35@1.75	
Lift Tubular, No. 0, doz. \$1.75@5.25	
Hinge Tubular, No. 0, doz. \$1.75@5.25	
Other Styles.....	40¢@10¢@10¢@5¢

Bull's Eye Police—

No. 1, 3 1/4 inch.....	20¢@2.75
No. 2, 3 inch.....	25¢@3.00

Lasts and Stands Shoe—

Stowell's Atlas, Malleable Iron.....	50¢
Stowell's Badger, Cast Iron.....	50¢

Latches—Thumb—

Roggin's Latches, with screw, doz. \$1.00	
Door.....	
Richards' Bull Dog, Heavy, No. 125.....	40¢

Richards' Trump, No. 127.....50%

Leaders Cattle—

Small.....	doz. 55¢; large, 60¢
Covert Mfg. Co.....	35¢

Lifters, Transom—

R & L.....	33 1/2%
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Lines—

Wire Clothes, Nos. 15 19 30	
100 feet.....	\$2.50 2.00 1.65
75 feet.....	1.80 1.70 1.30
Samson Cordage Works:	
Silver Lake Braided Chalk, No. 0 to 3.....	40%
No. 1, \$6.50; No. 2, \$7.00; No. 3, \$7.50	
Masons' Lines, Shade Cord, &c.: White	
Cotton, No. 3 1/2, \$1.50; No. 4, \$2.00; No	4 1/2, \$2.50; Colors, No. 3 1/2, \$1.75; No. 4,
\$2.25; No. 4 1/2, \$2.75; Lines, No. 3 1/2,	\$2.50; No. 4, \$3.00; No. 4 1/2, \$4.50.....
20%	
Tent and Awning Lines: No. 5, White	
Cotton, \$7.50; Drab Cotton, \$8.50.....	20%
Clothes Lines, White Cotton: 50 ft., \$2.75;	
60 ft., \$3.25; 70 ft., \$3.75; 75 ft., \$4.00;	
80 ft., \$4.25; 90 ft., \$4.75; 100 ft., \$5.25;	
Anniston Waterproof Lines, 50 ft., \$4	
gro., \$24.00; 60 ft. Edge, \$22.00; Air Line	
\$22.00; Acme, \$17.00; Alabama, \$15.00;	
Empire, \$14.00; Advance, \$13.50; Oriole,	
\$20.00; Albermarle, \$13.50; Eclipse,	
\$12.50; Chicago, \$11.00; Standard,	
\$10.00; Columbia, \$8.50; Allston, \$12.50;	
Calhoun, \$11.00.	

Locks—

Cabinet Locks.....	33 1/4@33 1/2¢@7 1/2%
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Door Locks, Latches, &c.—

Reading Hardware Co.....	45¢@20¢
R. & E. Mfg. Co.....	40¢
Sargent & Co.....	40¢@10¢
Stowell's Steel Door Latches.....	50%

Elevator—

Stowell's.....	50%
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Padilocks—

Wrought Iron.....	75¢@10¢@5¢@20¢@5¢
R. & E. Mfg. Co. Wrt. Steel and Brass.....	75¢@75¢@10%

Sash, &c.—

Ives' Patent.....	60%
Bronze and Brass.....	60%
Crescent.....	50¢@10¢
Iron.....	62 1/2%
Window Ventilating.....	60%
Robison Patent Ventilating Sash	
Lock.....	40%
Wrought Bronze and Brass.....	50%
Wrought Steel.....	50%
Pullman Patent Ventilating Lock.....	25%
Reading.....	60%

Machines—Boring—

Com. Upright, Without Augers.....	\$2.00
Com. Angular, Without Augers.....	\$2.25

R. & E. Mfg. Co. Upright, Angular.

Improved No. 3, \$4.40; No. 1, \$5.00	
Improved No. 3, 7.75; No. 3, 3.38	
Improved No. 2, 2.75	
Jennings' Nos. 1 and 4.....	35¢@5¢
Millers' Falls.....	5.75
Snell's, Rice's Pat. 2.50	2.75

Corking—

Retzinger Inevitable Hand Power.....	W. dos. \$48.00
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Fence—

Williams Fence Machines.....	each, \$5.50
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Hoisting—

Moore's Anti-Friction Differential Pul-	
ley Block.....	30%
Moore's Hand Hoist, with Lock Brake.....	30%

Ice Cutting—

Chandler's.....	12 1/2%
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Washing—

Boss Washing Machine Co. Per doz.	
Champion Rotary Banner No. 1.....	\$54.00
Standard Champion No. 1.....	\$48.00
Standard Perfection.....	\$36.00
Cinti Square Western.....	\$30.00
Unedea American, Round.....	\$29.00

Mallets—

Hickory.....	44¢@50%
Lignumvita.....	46¢@50%
Tinners', Hickory and Applewood,	dos..... 50¢@55¢

Mashers, Vegetable—

Western, W. G. Co., Potato.....	60¢@10%
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Mats—Door—

Elastic Steel (W. G. Co.).....	10%
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Mattocks—

See Picks and Mattocks.	
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Milk Cans—See Cans, Milk

Enterprise Mfg. Co.....	95¢@30%
National list Jan. 1, 1904.....	30%
Parker's Columbia & Victoria.....	50¢@10¢@60%
Parker's Box and Side.....	50¢@10¢@60%
SWITT, Lane Bros Co.....	30%

Mowers, Lawn—

Net prices are generally quoted.	
Cheap.....	all sizes, \$1.75@2.00
Good.....	all sizes, \$2.25@2.50
High Grade 4.25 4.50 4.75 5.00	
Continental.....	60¢@5%
Great American.....	70%
Quaker City.....	70%
Pennsylvania.....	60¢@5%
Pennsylvania, Jr., Ball Bearing.....	60%
Pennsylvania Golf.....	50%
Pennsylvania Horse.....	30¢@5%
Pennsylvania Pony.....	40¢@5%
Philadelphia:	
Style M. S. C. K. T.....	70¢@5%
Style A. all Steel.....	60¢@5%
Style E. High Wheel.....	70¢@10¢@5%
Drexel and Gold Coin, low list.....	40¢@5%

Nails—

Cut and Wire. See Trade Report.	
Wire Nails and Brads, Paupered.	
List July 20, 1899.....	85¢@10¢@100%
Hungarian, Finishing, Upholster-	
ers', &c. See Tacks.	

Horse—

Nos. 6 7 8 9 10	
Anchor 25 21 20 19 18.....	40¢@5¢
Champl'n 25 21 20 19 18.....	50%
Coleman.....	13 12 11 11..... net

Nos. 6 7 8 9 10

New Haven 23 21 20 19 18.....	40¢@5¢
Putnam.....	23 21 20 19 18..... 35¢@5¢
New P'tm'n 19 18 17 16 16.....	10¢@10%
Western, per lb.....	8 1/4¢
Jobbers' special brands, per lb. 8 @ 8 1/4¢	

Picture—

Brass Head.....	1 1/2 2 2 1/2 3 3 1/2 in.
Por. Head.....	1.10 1.10 1.10 1.00 gro.

Nippers, See Pliers and Nippers.

Nuts—

Cold Punched.....	Off list.
Mfrs. or U. S. Standard.	
Square, plain.....	\$5.10
Hexagon, plain.....	\$5.20
Square, C. T. & R.....	\$5.30
Hexagon, C. T. & R.....	\$5.00

Hot Pressed:

Mfrs., U. S. or Nar. Gauge Stan'd.	
Square Blank.....	\$5.80
Hexagon Blank.....	\$5.30
Square Tapped.....	\$5.80
Hexagon Tapped.....	\$5.30

Oakum—

Best or Government.....	lb. 6 1/2¢
Navy.....	lb. 6 c
U. S. Navy.....	lb. 6 c
Plumbers' Spun Oakum.....	2 1/2¢
In carload lots 1/4 lb. off f.o.b. New York.	

Oil Tanks—See Tanks, Oil.

Oilers—

Brass and Copper.....	50¢@10%
Tin or Steel.....	65¢@10%
Zinc.....	65¢@10%
Chase or Paragon:	
Brass and Copper.....	45¢@10¢@50%
Tin or Steel.....	65¢@10%
Zinc.....	65¢@10%
Malleable, Hammers' Improved, No. 1	
\$3.60; No. 2, \$4; No. 3, \$4.40 W. dos. 20%	
Malleable, Hammers' Old Pattern.....	50¢@10%
American Tube & Stamping Co.:	
Spring Bottom Cans.....	70¢@70¢@10%
Railroad Oilers etc.....	60¢@60¢@10%

Openers—Can—

French.....	dos. 35¢
Iron Handle.....	dos. 25¢@7c
Sprague, Iron Handle, per doz. 35¢@40¢	
Sardine Scissors.....	dos. \$1.75@3.00
National.....	30%
Stowell's sprague.....	per doz. 35¢@45¢

Egg—

Nickel Plate.....	per doz., \$2.00
Silver Plate.....	per doz., \$4.00

Packing—

Asbestos Packing, Wick and Rope,	
1 1/2 @ 15¢ lb.	

Rubber—

Sheet, C. I.....	80¢@10¢
Sheet, C. O.....	9¢@13¢
Sheet, C. B. S.....	10¢@14¢
Sheet, Pure Gum.....	60¢@55¢
Sheet, Red.....	40¢@50¢
Jenkins' 90, 10 to 30.....	35¢@25¢

Miscellaneous—

American Packing.....	70¢@10¢ lb.
Cotton Packing.....	16¢@35¢ lb.
Italian Packing.....	9¢@13¢ lb.
Jute.....	40¢@45¢ lb.
Russia Packing.....	8¢@11¢ lb.

Pails—Creamery

S. & C. Co., with gauges, No. 1 \$0.25;	
No. 2, \$0.50 W. dos.	

Galvanized—

Price per doz.	
Quart.....	10 15 20
Water, Regular.....	1.50 1.75 2.00
Water, Heavy.....	2.75 3.00 3.25
Fire, Rd. Bottom.....	2.30 2.60 2.80
Well.....	2.35 2

Stanley's Duplex.....	20@20&10&105	
Woods' Extension.....	334½	
Poachers, Egg—		
Buffalo Steam Egg Poachers, # do.	No. 1, \$4.00; No. 2, \$3.00; No. 3, \$2.00; No. 4, \$12.00.....	50½
Points, Glaziers—		
Bulk and 1 lb. papers.....	lb. 59¢	
½ lb. papers.....	lb. 94¢	
¼ lb. papers.....	lb. 94¢	
Pokes, Animal—		
Ft. Madison Hawkeye.....	½ doz. \$3.25	
Ft. Madison Wood.....	½ doz. \$4.00	
Police Coats—		
Manufacturers' Lists.....	25@25&50	
Towers.....	25½	
Polish—Metal—		
Prestolite Liquid, No. 1 (½ pt.).....	½ doz. \$3.00; No. 1 (1 qt.).....	\$9.72
Black Metal Polish.....	105	
George William Hoffman.....	10&101	
U. S. Metal Polish Paste, 8 oz. boxes,	doz. 50¢; ½ gr. \$4.50; ¼ lb. boxes, ½	doz. \$1.25; 1 lb. boxes, ½ doz. \$2.25.
U. S. Liquid, 8 oz. cans.....	½ doz. \$1.25; ½ gr. \$1.25; Friend Metal Polish, ½	doz. \$1.75; ½ gr. \$1.00.
Wynn's White Silk, ¼ pt. cans.....	½ doz. \$2.00	
Stove—		
Black Eagle Benzine Paste, 5 lb. cans.....	½ doz. \$10½	
Black Eagle, Liquid, ¼ pt. cans.....	½ doz. 75¢	
Black Jade Paste, 5 lb. cans.....	each, \$9.00	
Black Kid Paste, 5 lb. cans.....	each, \$9.00	
Ladd's Black Beauty, gr. \$10.00.....	505	
Joseph Dixon's, gr. \$5.75.....	105	
Dixon's Plumbago.....	½ gr. \$2.50	
Fireside.....	½ gr. \$4.50	
Gem, ½ gr. \$4.50.....	doz. \$3.50	
Japan.....	½ gr. \$3.50	
Peerless Iron Enamel, 10 oz. cans.....	½ doz. \$1.50	
Wynn's:		
Black Silk, 5 lb. pail.....	each 70¢	
Black Silk, 5 lb. box.....	½ doz. \$1.00	
Black Silk, 5 lb. can.....	½ doz. \$0.75	
Black Silk, ½ pt. liq.....	½ doz. \$1.00	
Poppers, Corn—		
1 qt. Square.....	gro. \$9.00	
1 qt. Round.....	gro. \$10.00	
1½ qt. Square.....	gro. 11.00	
¾ qt. Square.....	gro. 15.00	
Post Hole and Tree Augers and Diggers—		
See also Diggers, Post Hole, &c.		
Posts, Steel—		
Steel Fence Posts, each, 5 ft., 4½¢; 6	ft., 46¢; 6 ft., 45¢.	
Steel Hitching Posts, each.....	\$1.30	
Potato Parers—		
See Parers, Potato.		
Pots—Glue—		
Enameled.....	50½	
Tinned.....	50½	
Powder—		
In Cansisters:		
Duck, 7 lb. each.....	45¢	
Fine Sporting, 1 lb. each.....	75¢	
Rifle, ½ lb. each.....	16¢	
Rifle, 1-lb. each.....	25¢	
King's Bemt-Smokeless:		
Case (25 lb. bulk).....	\$8.50	
Case (12 lb. bulk).....	\$3.50	
Quarter Case (8½ lb. bulk).....	\$1.90	
Case 24 (1 lb. cans bulk).....	\$8.50	
Half case (1 lb. cans bulk).....	\$4.50	
King's Smokeless:	Shot Gun Rifle	
Case (25 lb. bulk).....	\$12.00 \$15.00	
Half Case (12½ lb. bulk).....	4.35 7.75	
Quarter Case (6½ lb. bulk).....	3.25 4.90	
Case (1 lb. cans bulk).....	14.00 17.00	
Half case 12 (1 lb. cans bulk).....	7.25 8.75	
Robin Hood smokeless Shot Gun.....	\$6&20½	
Presses—		
Fruit and Jelly—		
Enterprise Mfg. Co.....	20@25½	
Seal Presses—		
Morrill's No. 1, per doz. \$20.00.....	50½	
Pruning Hooks and Shears—See Shears.		
Pull or Cork—		
Invincible Cork Puller.....	\$21.00	
Pullers, Nail—		
Cyclops.....	50½	
Miller's Falls, No. 3, per doz. \$12.00.....	33½&105	
Pearson No. 1, Cyclops Spike Puller,	each \$30.00.....	50½
Electric Light.....	40&105	
Scranton Case Lots:		
No. 2 B (Garge).....	\$5.50	
No. 2 B (small).....	\$5.00	
Smith & Hemenway Co.:		
Diamond B, No. 2, case lots.....	½ doz \$8.00	
Diamond B, No. 2, cans lot.....	½ doz \$5.50	
Electric Light, No. 1, ½ doz. \$15; No. 2, \$15.00;	No. 3, \$15.....	401
Pulleys—Single Wheel—		
Inch.....	2 2½ 3	
Awning.....	\$9.55 25 1.15	
Hay Fork, Swivel or Solid Eye.....	doz., 4 in. \$1.15; 6 in., \$1.40	
Inch.....	2 2½ 3 4	
Hot House.....	\$0.70 .90 1.25	
Inch.....	1¼ 1½ 1¾ 2	
Screw.....	\$0.16 .19 .23 .30	
Inch.....	1 2 2½ 3 4	
Side.....	\$0.30 .40 .55 .65	
Inch.....	1¼ 1½ 2 2½ 3 4	
Tackle.....	\$0.30 .43 .68 1.00	
Stowells:		
Cumby or End, Anti-Friction.....	60&105	
Dumb Walter, Anti-Friction.....	\$6&105	
Electric Light.....	605	
Side Anti-Friction.....	\$6&105	
Sash Pulleys—		
Common Frame: Square or Round		
End, per doz. 1¼ and 3 in., 16¢; 18	Auger Mortise, no Face Plate, per	
doz. 1¼ and 2 in. 16¢		

Auger Mortise, with Face Plate, per 10@.13c
doz, 1 1/4 and 2 in. 10@.13c
Acme..... 1 1/4 in. 16¢; 2 in. 19¢
Fox-All-Steel, Nos. 3 and 7, 2 in. 50¢
Grand Rapids All-Steel Noiseless..... 50¢
Ideal..... 70¢-10¢
Niagara..... 1 1/4 in. 16¢; 2 in. 19¢
No. 26, Troy..... 1 1/4 in. 14 1/2¢; 2 in. 16 1/2¢
Star..... 1 1/4 in. 16¢; 2 in. 19¢
Tackle Blocks—See Blocks.

Pumps—
Cistern..... 60¢-80¢-10¢
Pitcher Spout..... 80¢-80¢-10¢
Wood Pumps, Tubing, Etc..... 45¢-50¢
Barnes Dbl. Acting (low list)..... 50¢-115¢
Barnes' Pitcher Spout..... 90¢
Contractors' Rubber Diaphragm No. 2
B. & L. Block Co..... \$1.50-1.40
Fancy Spray Pump..... 47¢-30¢
Flint & Walling's, Fast Mail Hand.....
(Low List)..... 35¢
Flint & Walling's Fast Mail (low list).....
53¢-55¢
Flint & Walling's Tight Top Pitcher..... 80¢
National Specialty Mfg. Co., measur-
ing, \$5.00..... 50¢
Mechanical Sprayer..... 47¢-30¢
Myer's Pumps, low list..... 50¢
Myers' Power Pumps..... 50¢
Myers' Spray Pumps..... 50¢

Pump Leathers—
Plunger and Lower Valve—Per gro.:
Inch..... 2 1/4 2 1/4 2 1/4 2 1/4
\$3.50 3.50 3.50 3.50 2.75 3.00
Inch..... 3 3 1/4 3 1/4 3 1/4 3 1/4
\$5.30 5.00 3.85 4.10 4.40
Plunger Cup Leathers—Per 100:
Inch..... 2 1/4 3 3 1/4 4
\$2.75 3.45 5.00 6.00

Punches—
Saddlers' or Drive, good, doz. 50¢-75¢
Spring, single tube, good quality.....
1.175¢-1.00
Revolving (1 tubes)..... doz. \$3.50-3.75
Bemis & Call Co.'s Chest Drive..... 50¢
Mechanical Call Co.'s Check..... 55¢
Morrill's No. 1 (A.B.C.) 4 doz..... \$15.00-50¢
No. 2, 4 doz. \$22.50..... 50¢
Hercules, each \$7.50..... 50¢
Niagara Hollow Punches..... 40¢
Niagara Solid Punches..... 55¢-10¢
Steel Screw, B. & K. Mfg..... 50¢
Bemis & Call Co.'s P. & W. Co..... 50¢
Timmer's Solid, P. S. & W. Co., 4 doz.....
\$1.44..... 60¢

Rail—Barn Door, &c.—
Cast Iron, Barn Door: Flange Screw
Holes for Rd. Groove Wheels:
1/4 3/4 1/2 in.
\$1.70 \$2.10 \$3.00 100 feet.
Angular for Sq. Groove Wheels:
Small. Mtd. Large.
\$1.50 1.90 3.50 100 feet.
Sliding Door, Iron Painted, 1/4 @ 3 1/4¢
Sliding Door, Wrought Brass, 1 1/4
in..... 10.36¢-30¢
Althl Mfg. Co.:
No. 1, Reliable Hanger Track, 4 ft. 5 1/2¢
No. 2, Reliable Hanger Track, 4 ft. 1 1/2¢
Cronk's:
Double Braised Steel Rail, 4 foot..... 3¢
O. N. T. Rail..... 2 1/4¢
Griffin's:
xxx, per 100 ft., 1 x 9-16 in., \$3.00; 1 1/4 x
9-16 in., \$3.25.
Hinged Hanger, per 100 ft. 1 x 9-16 in.,
\$3.00; 1 1/4 x 9-16 in., \$4.00.
Lane's:
Hinged Track, 4 foot, 1 in., \$3.70;
1 1/4 in., \$4.40.
O. N. T., 4 foot, 1 in., \$3.75; 1 1/4
in., \$4.50; 1 1/2 in., \$4.00.
Standard, 1 1/4 in., 100 ft..... 4.00
Lawrence B. & S.:
4 foot, 1 in., \$3.00; 4 foot, No. 20, \$4.40
New York, 1 x 9-16 in., 100 ft. \$2.75
McKinney's:
Hinged Hanger Rail 4 foot, 1 1/2..... 50¢
None 6 footer..... 4 ft. 3 1/4¢
Standard..... 4 ft. 4¢
Myers' Stayon Track..... 60¢
Richards Mfg. Co.:
Common 1-1/2, \$1.75; 1 1/4 x 9-16, \$3.25;
1 1/4 x 16, \$4.50
Special Hinged Hanger Rail..... \$4.40
Fire Door Track, 4 ft. 2 1/4 x 3/4, 15¢;
3 1/2 x 3/4, 9¢.
Lar Screw Rail, No. 6..... 40¢
Gause Trolley Track, 4 ft. No. 51, 10¢;
No. 52, 15¢.
Safety Door Hanger Co.'s Storm King
Safety..... 60¢
Safety Door Hanger Co.'s U.S. Standard.....
60¢
Stowell's:
Cast Rail..... 4 ft. 1 1/4¢
Paragon's, 20 tooth, 4 ft. 1 1/4¢
Wrought Bracket, 1-1/4 9-16 in., 4 ft. 3¢
Wrought Bracket, 1-1/4 3-16 in., 4 ft. 7¢
Sweet's Hylo, per ft. 11¢..... 50¢-10¢
Sweet's P. L. B. Steel Rail, 4 foot, \$3.00

Rakes—
Net Prices, Malleable Rakes:
10 12 14 16-tooth
Shank..... \$1.50 1.60 1.75 1.85
Socket..... \$1.65 1.80 1.95 2.10
Steel Garden and Gravel, Aug. 1,
99 List..... 70¢
Weldless Steel..... 75¢-65¢
Malleable Iron, Garden..... 70¢-10¢
Lawn Rakes, Metal Head, per doz.
20 teeth..... \$3.50-5.50
24 teeth..... \$3.50-5.75
Paragon's 20 tooth, 4 ft. 1 1/4¢
Fort Madison Blue Head Lawn..... 32¢
Paragon, 24-tooth, 4 ft. 1 1/4¢
Jackson Lawn, 29 and 30 teeth..... 40¢
Kohler's:
Lawn Queen, 20-tooth, 4 doz..... \$3.45
Lawn Queen, 24-tooth, 4 doz..... \$3.60
Paragon, 20 tooth, 4 doz..... \$2.75
Paragon, 24-tooth, 4 doz..... \$3.00
Steel Garden, 14-tooth, 4 doz..... \$2.98
Malleable Garden, 14-tooth, 4 doz.....
\$1.75-2.00

Raps, Horse—
Dilston..... 75¢
Heller Bros..... 70¢-55¢-20¢-10¢
McCaffrey's American Standard & 10¢
New Nicholson..... 70¢-10¢
See also, Flycs.

Razors—		
Boresic.....		.60%
Fox Razors, No. 42, \$ 4 doz. \$20.00		
Fox Razors, No. 44, \$ 4 doz. \$20.00		
Fox Razors, No. 82, Platina, \$ doz.		41%
	-25.00	
Red Devil.....		.60%
Silberstein.....		.40%
Carbo Magnetic.....		\$18.00
Griffon, No. 65.....		\$15.00
Griffon, No. 90.....		\$12.00
All other Razors.....		.40%
Safety Razors—		
Silberstein.....		.40%
Reels— Fishing—		
Hendryx:		
M 6, Q 6, A 6, B 6, M 9 1/2, M 14, Q 10, A 10, B 10, 4008, Rubber Popolo, Nickel Populo.....		.25%
Aluminum, German Silver, Bronze.....		.30%
1240 N, 124 N.....		.20%
3001 N, 06 N, 6 RM, G 9.....		.25%
4 N, 4 P N, 24 N, 26 PN.....		.20%
2004 P.....		.33 1/2%
2004 P N.....		.33 1/2%
0921 N.....		.33 1/2%
0204 N.....		.33 1/2%
002001 P N.....		.33 1/2%
802 N.....		.33 1/2%
986 PN, 2004 N, 974 PN.....		.25%
5009 PN, 5009 N.....		.20%
Competitor, 103 P, 103 PN, 203 P, 203 PN, 102 P, 909 P.....		.20%
804 P, 304 PN, 00304 P, 00304 PN.....		.33 1/2%
Registers—List July 1, 1908.		
Black Jap.....		75¢ to 1.00
White Jap.....		75¢ to 1.00
Bronzed.....		75¢ to 1.00
Nickel Plated.....		75¢ to 1.00
Electro Plated.....		75¢ to 1.00
Revolvers—		
Single Action.....		.85 to .90
Double Act N, except 44 cal.....		.91.50
Double Act, 44 caliber.....		.91.00
Automatic.....		.85.00
Hammerless.....		.84.10
Note.—Jobbers frequently cut the above prices of manufacturers for small trade.		
Riddles, Hardware Grade		
16 in., per doz.....		\$2.25 to \$2.50
17 in., per doz.....		\$2.50 to \$2.75
18 in., per doz.....		\$2.75 to \$3.00
Rings and Ringers—		
Bull Rings—		
	2 1/2	3 Inch
Steel.....	\$0.70	0.75 0.80 doz.
Copper.....	1.00	1.15 1.40 doz.
Hog Rings and Ringers—		
Hill's Rings...gro. boxes, \$4.35 to \$4.50		
Hill's Ringers, Gray iron, doz. 50 to 55c		
Hill's Ringers, Mal. iron, doz. 70 to 75c		
Hair's Rings.....per gro. \$5.00 to \$5.25		
Blair's Ringers.....per doz. \$0.60 to .65		
Brown's Rings.....per gro. \$5.25 to \$5.50		
Brown's Ringers.....per doz. \$0.65 to .70		
Rivets and Burrs—		
Copper.....	.60¢ to .60¢ to 10¢	
Iron or Steel.....	.75¢ to .75¢ to 10¢	
Rollers—		
Ame. Stowell's Anti-Friction.....		.50%
Barn Door, Sargent's list.....		.60%
Cronk's Stay.....		.72¢
Cronk's Brinkerhoff.....		.90¢
Luc's Stay.....		.40%
Richard's Stay.....		.40%
Handy Adj. and Reversible No. 53.....		.50%
O. K. Adj. and Reversible No. 58.....		.50%
Lag screw, Nos. 53 and 57.....		.50%
Fire Door No. 59.....		.40%
Favorite, No. 54.....		.40%
Stowell's Barn Door Stay.....	\$ doz. \$1.00	
Ropes—		
Manila, 7-16 in. diam and larger, tarred or untarred.....	lb. 11 1/2¢	
Manila, Hay, Hide and Bale		
Ropes, Medium and Coarse lb. 11 1/2¢		
Sisal, 7-16 in. diam. and larger:		
Mixed.....	lb. 7 1/2¢	
Pure.....	lb. 9 c	
Sisal, Hay, Hide and Bale Ropes, Medium and Coarse:		
Mixed.....	lb. 7 1/2¢	
Pure.....	lb. 9 c	
Sisal, Tarred, Medium		
Lath Yarn:		
Mixed.....	lb. 7 c	
Pure.....	lb. 9 1/2¢	
Cotton Rope:		
Best.....4-in. and larger.....	18 to 19¢	
Medium.....4 in. and larger.....	16 to 18¢	
Com.....4-in. and larger.....	13 to 15¢	
Jute Rope:		
Thread No. 1, 4-in. and up, lb. 6 c		
Thread No. 2, 4-in. and up, lb. 6 c		
Wool Twine.....	lb. 5 1/2¢	
Old Colony Manila Transmission Rope	\$ n 17 1/2¢	
Wire Rope—		
Galvanized.....		.47 to .50¢
Plain.....		.55 to .58¢
Ropes, Hammocks—		
Covert Mfg. Co.:		
Jute.....	40 to 45¢	
Sisal.....	35 to 40¢	
Covert Saddle Works.....	40 to 45¢	
Rules—		
Boxwood.....	60 to 10¢ to 10¢	
Ivory.....	35¢ to 10¢ to 35¢ to 10¢ to 5¢	
Chapin-Stephens Co.:		
Boxwood.....	60 to 40¢ to 10¢	
Ivory.....	35 to 10¢ to 10¢	
Miscellaneous.....	50 to 70¢ to 10	

Pawn Nut Co.:
Boxwood.....60¢@60¢&10¢
Ivory.....35¢&10¢@55¢&10¢&10¢

Sash Balances—See Balance Sash.

Sash Locks—See Locks, Sash

Sash Weights—
See Weights, Sash.

Sausage Stuffers or Fillers—
See Stuffers or Fillers, Sausage.

Saw Frames—See Frames, Saw.

Saw Sets—See Sets, Saw.

Saw Tools—See Tools, Saw.

Saws—

Atkins:
Circular.....50¢
Band.....50¢&10¢@60¢
Cross Cuts.....35¢&40¢
Mulay, Mill and Drag.....30¢
Framed Wood Saws.....40¢
Wood Saws.....40¢
Hand, compass, &c.....40¢

Chapin-Stephens Co.:
Turning Saws and Frames.....80¢@90¢&10¢

Diamond Saw & Stamping Works:
Sterling Kitchen Saws.....50¢&10¢&5¢

Dieston's:
Circular, Solid and Inserted Tooth.....50¢
Band, 3 to 14 in wide.....50¢
Band, 1/4 to 2 1/2.....70¢
Crosscuts.....45¢
Narrow Crosscuts.....50¢
Mulay, Mill and Drag.....50¢
Framed Wood Saws.....35¢
Wood Saw Blades.....35¢
Wood Saw Rods.....25¢
Hand Saws, Nos. 12, 99, 9, 10, 1190,
Ds, 120, 79, 77, 8.....25¢
Hand Saws, Nos. 7, 107, 107 1/2, 3, 1,
0, 0, 0, Combination.....30¢
Butcher Keyhole &c.....35¢
Butcher Saws and Blades.....35¢

C. E. Jennings & Co.'s:
Back Saws.....25¢
Butcher Saws.....30¢
Compass and Key Hole Saws.....35¢&5¢
Framed Wood Saws.....30¢
Hand Saws.....30¢&2 1/2¢
Wood Saw Blades.....35¢

Millers Fall:
Butcher Saws.....15¢&10¢
Star Saw Blades.....18¢&10¢

Richards' & Richardson's Hand Saws.....30¢

Simonds:
Circular Saws.....50¢
Crescent Ground Cross Cut Saws.....35¢
One-Man Cross Cuts.....40¢&10¢
Gang Mill, Mulay and Drag Saws.....50¢
Band Saws.....50¢
Back Saws.....25¢&2 1/2¢
Butcher Saws.....25¢&2 1/2¢
Hand Saws.....25¢&2 1/2¢
Hand Saws, Bay State Brand.....45¢
Compass, Keyhole, &c.....25¢&2 1/2¢
Wood Saws.....25¢&2 1/2¢

Springfield Mach. Screw Co.:
Diamond Kitchen Saws.....40¢&10¢@30¢
Butcher Saw Blades.....35¢&5¢
Wheeler, Madden & Clemons Mfg. Co.'s
Cross Cut Saws.....50¢

Hack Saws—

Atkins' Hack Saw Blades A & A.....25¢

Dieston:
Concave Blades.....25¢
Keystone.....25¢
Hack Saw Frames.....30¢
Fitzburg File Works, T&E Best.....25¢

C. E. Jennings & Co.'s:
Hack Saw Frames, Nos. 175, 180.....40¢&7 1/2¢
Hack Saws, Nos. 175, 180, complete.....40¢&7 1/2¢

Goodell's Hack Saw Blades.....40¢

Griffin's Hack Saw Frames.....35¢&5¢&10¢

Griffin's Hack Saw Blades.....35¢&5¢&10¢

Springfield Mach. Screw Co.:
Diamond Hack Saw Blades.....35¢
Diamond Trip Hack Saw Frames.....50¢
Star Hack Saws and Blades.....15¢&10¢
Sterling Hack Saw Blades.....50¢
Sterling Hack Saw Frames.....50¢&4¢&5¢

Scroll—

Barnes' No. 7, \$15.....25¢

Barnes' Scroll Saw Blades.....40¢

**Favorite, Velociped Power Scroll Saw,
with honing attachment, \$18.....\$18
with boring attachment, \$20.....\$20
Lester, complete, \$10.00.....\$10.00
Rogers, complete, \$4.00.....\$4.00**

Scalers, Fish—
Covert's Saddlery Works.....60¢&10¢

Scales—

Family, Turnbull's.....50¢@50¢&10¢

Counter:
Hatch, Platform, 4x10x16, doz.\$5.50
Two Platforms, 4x10x16, doz. \$16
Union Platform, Plain, \$1.70 to 1.90
Union Platform, Striped \$1.85 to 2.15

Chatillon's:
Eureka.....25¢
Diamond Trip Hack Saws.....40¢
Grocers' Trip Hack Saws.....30¢

Chicago Scale Co.:
The "Little Detective," 35 lbs.....50¢
Union or Family No. 2.....60¢
Portable Platform (reduced list).....50¢
Wagon or Stock (reduced list).....35¢&5¢
The Standard Portables.....60¢
"The Standard" E. R. and Wagon.....50¢

Scrapers—
Box, 1 Handle.....doz. \$1.00 to \$2.50
Box, 2 Handle.....doz. \$2.50 to \$3.85

Ship
Light, \$2.00; Heavy, \$4.50

**Adjustable Box Scraper (S. R. & L. Co.)
\$6.00.....30¢@20¢&10¢**

Chapin-Stephens Co., Box.....50¢@50¢&10¢

**Screens, Window, and
Frames—**

Flyer Pattern Screens.....60¢&5¢&60¢&5¢&10¢

Maine Screen Frames.....40¢&10¢&5¢

Perfection Screens.....60¢&5¢&60¢&5¢&10¢

Phillips Screen Frames, 60¢@50¢&60¢&5¢&10¢

d.c.—See *Benders and Upsetters, Tire.*

Tools—Coopers'—	
L. & I. J. White	20@20&55
Hay—	
Myers' Hay Tools	50%
Stowell's Hay Carriers	50%
Stowell's Hay Forks	50%
Stowell's Fork Pulleys	50%
Saw—	
Atkins' Cross Cut Saw Tools	40%
Simonds' Improved	33 1/2%
Simonds' Crescent	35%
Ship—	
L. & I. J. White	25%
Transom Lifters—	
See Lifters, Transom.	
Traps—Fly—	
Balloon, Globe or Acme	doz. \$1.15@1.85; gro. \$1.50@1.90
Harper, Champion or Paragon	doz. \$1.25@1.40; gro. \$1.50@1.90
Game—	
Oneida Pattern	75¢@10¢@75¢@10¢
Newhouse	45¢@45¢
Hawley & Norton	65¢@65¢
Victor (Oneida Pattern)	75¢@75¢
O.C. Jump (Blake Pattern)	60¢@60¢
Mouse and Rat—	
Mouse, Wood, Choker, doz. holes	8¢@9¢
Mouse, Round or Square Wire	doz. 85¢@90¢
Marty French Rat and Mouse Traps	
(Genuine)	
No. 1, Rat, each \$1.19 1/2; doz. \$12.00	
No. 3, Rat, doz. \$8.00; case of 50	\$5.25 doz.
No. 3 1/2, Rat, doz. \$4.75; case of 72	\$4.25 doz.
No. 4, Mouse, doz. \$3.50; case of 7	\$3.75 doz.
No. 5, Mouse, doz. \$3.75; case of 150	\$2.35 doz.
Trimmers Spoke—	
Wood's E.I.	30%
Trowels—	
Diston Brick and Pointing	30%
Diston Plastering	35%
Diston "Standard Brand" and Garden Trowels	38%
Kohler's Steel Garden Trowels, 5 in.	gro. \$1.30
Kohler's Steel Garden Trowels, 6 in.	gro. \$1.30
Never-Break Steel Garden Trowels	gro. \$1.00
Rose Brick and Plastering	35¢@55¢
Woodrough & McParlin, Plastering	25%
Trucks, Warehouse, &c.—	
B. & L. Block Co.	
New York Pattern	50¢@10%
Western Pattern	60¢@10%
Handy Trucks	per doz. \$16.00
Grocery	per doz. \$15.00
Daisy Stove Trucks, Improved pattern	doz. \$18.50
Model Stove Trucks	doz. \$18.50
Tubs, Wash—No. 1	
Galvanized, per doz. \$4.75 5 85 6.00	
Galvanized Wash Tubs (S. S. & Co.)	
No. 1, 2, 3	
Per doz., net \$5.70 6.50 7.20 6.50 7.20 8.10	
Twine—Miscellaneous—	
Flax Twine—BC B.	
No. 9, 1/4 and 1/2 lb. Balls	22¢@45¢
No. 12, 1/4 and 1/2 lb. Balls	18¢@50¢
No. 18, 1/4 and 1/2 lb. Balls	16¢@18¢
No. 24, 1/4 and 1/2 lb. Balls	16¢@18¢
No. 36, 1/4 and 1/2 lb. Balls	15¢@17¢
Chalk Line, Cotton, 1/4 lb	
Balls	30¢
Cotton Mops, 6, 9, 12 and 15 lb. to	doz. 10¢@12¢
Cotton Wrapping 5 Balls to lb.	according to quality 16¢@25¢
American 3-Ply Hemp, 1/4 and 1/2 lb.	Balls 15¢@16¢

American 3 Ply Hemp, 1-lb. Balls	15¢@16¢
India 2-Ply Hemp, 1/4 and 1/2 lb.	Balls (Spring Twine) 9¢
India 3-Ply Hemp, 1-lb. Balls	9¢
India 3-Ply Hemp, 1/4-lb. Balls	8¢
2, 3, 4 and 5-Ply Jute, 1/4-lb. Balls	9¢@10¢
Mason Line, Linen, 1/4-lb. Balls	16¢
No. 26 Mattress, 1/4 and 1/2-lb. Balls	57¢
Wool, 3 to 6 ply	54¢@66¢
Vises—	
Solid Box	50¢@10¢@60%
Parallel—	
Athol Machine Co.	
Simpson's Adjustable	40%
Standard	40%
Amateur	25%
Columbian Hdw. Co.	40%
Emmert Universal	
Pattern Makers' No. 1, \$15.00; No. 2, \$12.50; No. 3, \$10.00	
Machinist and Tool Makers' No. 4 \$12.50; No. 5, \$7.00; No. 6, \$10.00; No. 10, \$21.50	
Jewelers' No. 7	\$4.00
Fisher & Norris Double Screw	15¢@10%
Holland's	
Machinists	40¢@40¢
Keystone	65¢@70%
Lewis Tool Co.	30¢@30%
Merrill's	20%
Miller's Falls	60¢@10%
Massey Vise Co.	
Victor	40%
Perfect	30%
Lighting Grip	30%
Parker's	
Victor	20¢@25%
Regulars	20¢@25%
Vulcan's	40¢@45%
Combination Pipe	55¢@65%
Prentiss	30¢@35%
Sargent's	40%
Smith & Hemenway Co.	
Machinists	40%
Jewelers	30%
Snediker's X. L.	33 1/2%
Stephens	33 1/2%
Saw Filers—	
Diston's D 3 Clamp and Guide, doz.	\$30.
Perfection Saw Clamps, doz.	\$5.00
Reading	60%
Wentworth's Rubber Jaw, Nos. 1, 2 and 3	45¢@50%
Wood Workers—	
Massey Vise Co.	
Lighting Grip	15%
Perfect	35%
Wyman & Gordon's Quick Action, 6 in., \$6.00; 9 in., \$7.00; 14 in., \$8.00	
Miscellaneous—	
Signal & Keeler Combination Pipe	60¢@10%
Holland's Combination Pipe	60¢@85%
Massey's Quick Action Pipe	40%
Parker's Combination Pipe	40%
87 Series	60%
187 Series	80¢@5%
No. 870	40%
Wads—Price Per M.	
B. E., 11 up	60¢
B. E., 9 and 10	70¢
B. E., 8	80¢
B. E., 7	80¢
P. E., 11 up	\$1.00
P. E., 9 and 10	1.25
P. E., 8	1.50
P. E., 7	1.50
Ely's B. E., 11 and larger	\$1.70@1.75
Ely's P. E., 12 to 20	\$3.00@3.25
Ware, Hollow—	
Cast Iron, Hollow—	
Stove Hollow Ware:	
Enameled	55¢@10¢@60%
Ground	60¢@10¢@65%
Plain or Unground	65¢@10¢@70%

Country Holloware per 100 lbs., \$2 50	
White Enameled Ware:	
Maslin Kettles	70%
Covered Ware:	
Tinned and Turned	40%
Enameled	50%
See also Pots, Glue.	
Enameled—	
Agate Nickel Steel Ware	50¢@30
Agate Nickel Steel Ware, Specials	60¢@15%
Iron Clad Ware	70¢@10%
Lava, Enameled	40¢@10%
Never Break Enameled	50%
Tea Kettles—	
Galvanized Tea Kettles:	
Inch	6 7 8 9
Each	1.50 50¢ 55¢ 65¢
Steel Hollow Ware.	
Avery Spiders & Griddles	65¢@65¢
Avery Kettles	30%
Porcelain	50¢@50¢@10%
Never Break Spiders and Griddles	65¢@5%
Never Break Kettles	60%
Solid Steel Spiders & Griddles	65¢@5%
Solid Steel Kettles	60%
Warmers, Foot—	
Pike Mfg. Co., Soapstone	40¢@40¢@10%
Washboards—	
Solid Zinc:	
Crescent, family size, bent frame	\$3.00
Red Star, family size, stationary protector	\$3.00
Double Zinc Surface:	
Saginaw Globe, family size, stationary protector	\$2.85
Cable Cross, family size, stationary protector	\$2.90
Single Zinc Surface:	
Nalad, family size, open back perforated	\$3.40
Saginaw Globe, protector, family size, ventilated back	\$2.35
Brass Surface:	
Brass King, Single Surface, open back	\$3.00
Nickel Plate Surface:	
No. 1001 Nickel Plate, Single Surface	\$3.00
Glass Surface:	
Glass King, Single Surface, open back	\$3
Enamel Surface:	
Knack King, Single Surface, ventilated back	\$3.00
Washers—Leather, Axle—	
Solid	80¢@10¢@80¢@10¢@10%
Patent	1/4 1 1 1/4 1 1/2 Inch.
Coil:	1/4 1 1 1/4 1 1/2 Inch.
Iron or Steel—	
Size bolt	5-16 3/4 1/2 3/4 3/4
Washers	\$5.00 4.10 2.80 2.80 2.40
In lots less than one keg add 1/4¢ per lb., 5-lb. boxes add 1/4¢ to list.	
Cast Washers—	
Over 1/2 inch, barrel lots, per lb	19¢@2¢
Wedges—	
Oil Finish	lb. 2.35@2.40¢
Weights—	
Hitching—	
Covert Mfg. Co.	40¢@25
Covert's Saddlery Works	60¢@10%
Sash—	
Per ton, f.o.b. factory:	
Eastern District	\$25.00
Western, Central and Southern Districts market unsettled, prices ranging from \$17.50@19.00	
Wheels, Well—	
8-in., \$1.50@1.80; 10-in., \$2.00@2.25; 12-in., \$2.45@2.65; 14-in., \$4.00@4.25	
Wire and Wire Goods—	
Bright and Annealed:	
6 to 9	75¢@75¢@10%
10 to 18	75¢@75¢@10¢@5%
19 to 26	75¢@10¢@10¢@5%
27 to 36	75¢@10¢@7 1/4¢@80¢@2 1/2%

Galvanized:	
6 to 9	70¢@5¢@70¢@10%
10 to 18	70¢@5¢@70¢@10%
19 to 26	75¢@75¢@5%
27 to 36	70¢@70¢@5%
Coppered:	
6 to 9	70¢@5¢@70¢@10%
10 to 18	70¢@10¢@70¢@10¢@5%
19 to 26	75¢@10¢@70¢@10%
27 to 36	70¢@70¢@5%
Tinned:	
6 to 14	75¢@10¢@75%
15 to 18	70¢@10¢@70¢@10¢@5%
19 to 26	65¢@10¢@70¢@10%
27 to 36	60¢@60¢@10%
Annealed, Steel and Tinned, on Spools.	
70¢@70¢@10%	
Brass & Copper on Spools	80¢@10%
Brass, list Feb. 26, '96	30%
Copper, list Feb. 26, '96	15%
Cast Steel Wire	50%
Wire Clothes Line, see Lines.	
Wire Picture Cord, see Cord.	
Bright Wire Goods—	
List June 24, 1903, 30¢@10¢@90¢@10¢@10%	
Wire Cloth and Netting—	
Galvanized Wire Netting	
80¢@10¢@80¢@10¢@5%	
Painted Screen Cloth, per 100 ft. \$1.25	
Standard Galv. Hardware Grade:	
Nos. 2, 2 1/2 and 3 Mesh, sq. ft.	3¢
Nos. 4 and 5 Mesh, sq. ft.	3 1/2¢
No. 6 Mesh, sq. ft.	3 1/2¢
No. 8 Mesh, sq. ft.	4¢
Wire Barb—See Trade Report.	
Wrenches—	
Agricultural	75¢@10¢@75¢@10¢@5%
Alligator	70%
Baxter Pat'n S Wrenches	70¢@5¢@70¢@10%
Drop Forged S.	15¢@15¢@5%
Acme	80¢@10%
Alligator Pattern	70%
Bull Dog	70%
Bemis & Co's	40%
Adjustable S.	40%
Adjustable S Pipe	40%
8-mis Pipe	60%
Brigg's Pattern	40%
Combination Black	40¢@5%
Combination Bright	40%
Merrick's Pattern	50%
Boardman's	35%
Coe's Genuine Knife Hdl.	40¢@10¢@5%
Coe's Genuine Steel Hdl.	40¢@10¢@5%
Coe's Genuine Key Model	40¢@10¢@5%
Coe's "Mechanics"	40¢@10¢@5%
Donohue's Engineer	40¢@10%
Eagle	50¢@10%
Eight Wrenches	40%
Eight Monkey Wrench Pipe Jaws	35¢@4%
Gem Pocket	30%
Hercules	70%
W. & B. Machinist:	
Case lots	50¢@5%
Less than case lots	50%
Improved Pipe (W. & B.)	50¢@50¢@5%
Solid Handier, P. S. & W.	50%
Stillman	85%
Vulcan Chain	50%
Wrought Goods—	
Staples, Hooks, &c., list March 17	90¢@90¢@4%
Yokes Neck—	
Covert Saddlery Works, Trimmed	70%
Covert Saddlery Works, Neck Yoke	70%
Centers	70%
Yokes, Ox, and Ox Bows—	
Fort Madison's Farmers & Freighters	list net
Zinc—	
Sheet	per 100 lbs \$6 55¢@6 60

PAINTS, OILS AND COLORS.

White Lead, Zinc, &c.	
Lead, English white, in Oil	94¢@ 94¢
Lead, American White, in Oil:	
Lots of 500 lb or over	63 1/2%
Lots less than 500 lb.	7
In Barrels	6
Lead, White, in oil, 25 lb tin	
balls, add to keg price	1/4
Lead, White, in oil, 12 1/2 lb tin	
balls, add to keg price	1/4
Lead, White, in oil, 1 to 5 lb as	
sorted tins, add to keg price	1/4
Lead, American, Terms: For lots 12 tons and over 1/4¢ rebate; and 2% for cash if paid in 15 days from date of invoice; for lots of 500 lbs. and over 2% for cash if paid in 15 days from date of invoice; for lots of less than 500 lbs. net.	
Lead, White, Dry in bbls.	8
Zinc, American, dry	45¢@ 47 1/2%
Zinc, French:	
Paris, Red Seal, dry	74%
Paris, Green Seal, dry	94%
Antwerp, Red Seal, dry	83 1/2%
Antwerp, Green Seal, dry	83 1/2%
Zinc, V. M. French, in Poppy Oil	83 1/2%
Green Seal:	
Lots of 1 ton and over	11 1/4¢@11 1/4%
Lots of less than 1 ton	11 1/4¢@12
Zinc, V. M. French, in Poppy Oil	
Red Seal:	
Lots of 1 ton and over	10¢@10 1/2%
Lots of less than 1 ton	10 1/2¢@10 1/2%
Discounts—French Zinc—Discounts to buyers of 10 bbl. lots of one or mixed grades, 15; 25 bbls., 25; 50 bbls., 45.	
Dry Colors.	
Black, Carbon	5¢@ 10
Black, Drop, Amer.	4¢@ 6
Black, Drop, Eng.	10¢@20
Black, Ivory	10¢@20
Lamp, Com.	4 1/2¢@ 6
Blue, Celestial	4¢@ 6
Blue, Chinese	20¢@ 32
Blue, Prussian	27¢@30
Blue, Ultramarine	4 1/2¢@15
Brown, Spanish	4 1/2¢@15
Carmine, No. 40	\$3.65@4.00
Green, Chrome, ordinary	34¢@ 6.

Green, Chrome, pure	17¢@25
Lead, Red, bbls. 1/2 bbls. and kegs:	
Lots 500 lb or over	6 1/2%
Lots less than 500 lb.	7
Litharge, bbls. 1/2 bbls. and kegs:	
Lots 500 lb or over	6 1/2%
Lots less than 500 lb.	7
Ocher, American	\$1.00@1.40
Ocher, American Golden	2 1/2¢@ 3
Ocher, French	1 1/2¢@ 2 1/4
Ocher, Foreign Golden	3¢@ 4
Orange Mineral, English	8¢@10 1/4
Orange Mineral, French	10¢@11 1/4
Orange Mineral, German	7¢@ 10
Orange Mineral, American	4¢@ 8 1/2
Red, Indian, English	4 1/2¢@ 8 1/2
Red, Indian, American	3¢@ 3 1/4
Red, Turkey, English	4¢@ 6
Red, Tuscan, English	7¢@ 10
Red, Venetian, Amer.	\$1.00@1.50
Red, Venetian, English	\$1.00@1.15
Sienna, Italian, Burnt and	
Powdered	3¢@ 6 1/4
Sienna, Ital., Raw, Powd.	3¢@ 6 1/4
Sienna, American, Raw	14¢@ 2
Sienna, American, Burnt and	
Powdered	1 1/4¢@ 2
Talc, French	1¢@ 1 1/2
Terra Alba, French	75¢@1.25
Terra Alba, English	90¢@1.00
Terra Alba, American No. 1	60¢@70
Terra Alba, American No. 2	45¢@50
Umber, Turkey, Raw & Powd.	2 1/2¢@ 3 1/2
Umber, Turkey, Raw & Powd.	2 1/2¢@ 3 1/2
Umber, Bnt, Amer.	1 1/2¢@ 2
Umber, Raw, Amer.	1 1/2¢@ 2
Yellow, Chrome	11¢@ 14
Vermilion, American Lead	10¢@25
Vermilion, Quicksilver, bulk.	65%
Vermilion, Quicksilver, bags	75%
Vermilion, English, Imp.	13¢@20
Vermilion, Chinese	\$0.90@1.00
Colors in Oil.	
Black, Lampblack	12¢@14
Blue, Chinese	38¢@48
Blue, Prussian	32¢@38
Blue, Ultramarine	13¢@14
Brown, Vandyke	11¢@14

Green, Chrome	10	@ 15
Green, Paris		@ 84
Sienna, Raw	12	@ 15
Sienna, Burnt	12	@ 15
Umber, Raw	11	@ 14
Umber, Burnt	11	@ 14
Miscellaneous.		
Barytes, White Foreign	ton	\$17.50@20.00
Barytes Amer. floated		18.50@20.00
Barytes, Crude, No. 1		10.00@11.00
Chalk, in bulk		3.00¢ @ 3.25
Chalk, in bbls	100 lb	@ 35
China Clay, English	ton	11.00@17.00
Cobalt, Oxide	100 lb	2.50¢
Whiting, Common	100 lb	.45¢ .48
Whiting, Gliders		.55¢ .57
Whiting, extra Gliders		.58¢ .60
Putty.		
In bladders		14¢@20
In bulk		13¢@2
In cans 1 lb to 5 lb		21¢@4
In cans 1 1/2 lb to 25 lb		14¢@2
Spirits Turpentine.		
In Oil bbls		.53¢ .55¢
In machine bbls		.54¢ .55¢
Gum.		
Cambium	100 lb	@ 11 @ 15
Common Bone		.4 @ 8
Extra White		.18 @ 21
Foot Stock, White		.11 @ 14
Foot Stock, Brown		.7 @ 10
German hides		.12 @ 18
French		.10 @ 10
Irish		.10 @ 11
Leather		.10 @ 11
Medium White		.14 @ 17
Gum Shellac— Cts. per lb.		
Bleached, Commercial		.15 @ 16
Rose Dried		.56 @ 60
Button		.43 @ 49
Diamond I		.60 @ 60
Fine Orange		.32 @ 51
A. C. Garnet		.48 @ 50
Orange		.56 @ 56
Octagon		.56 @ 56
T. S. O		.50 @ 51
V. N.		.63 @ 63